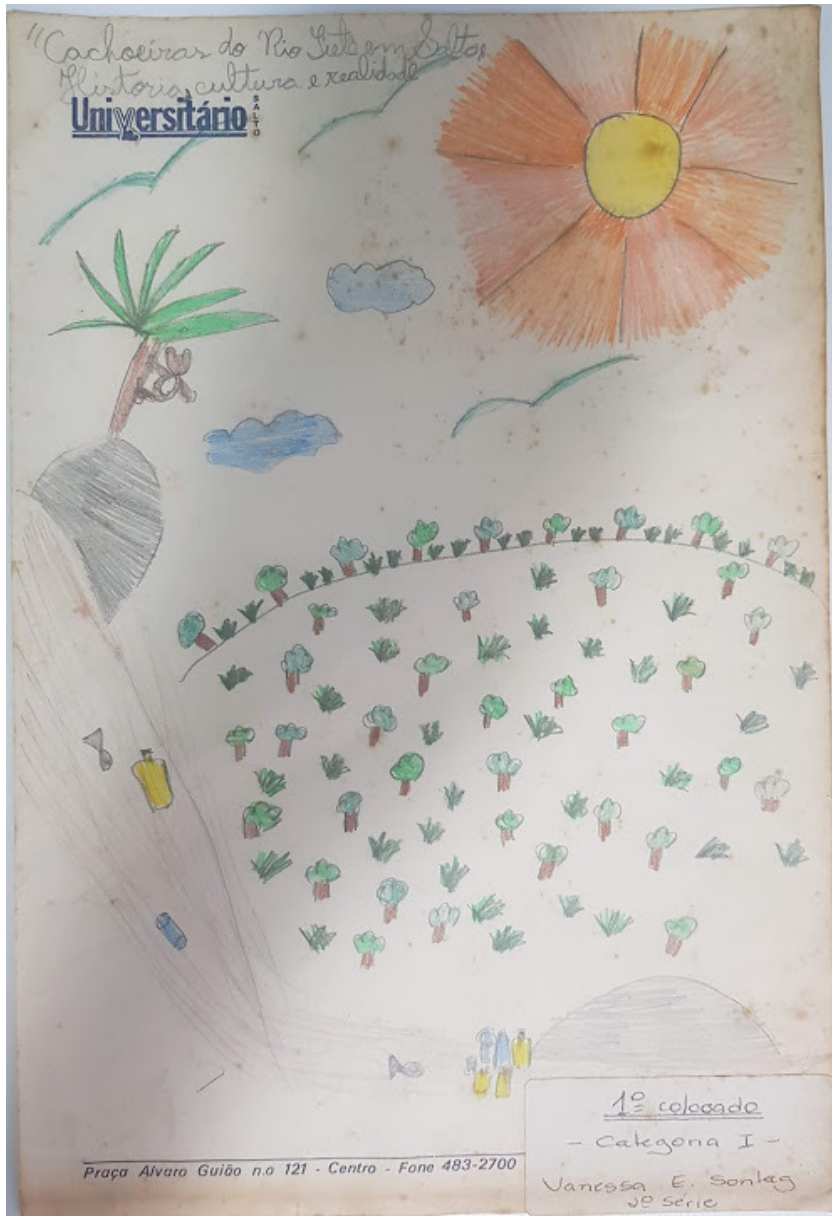
Ilustração científica: figuras nos artigos

Disciplina Publicação de artigos científicos

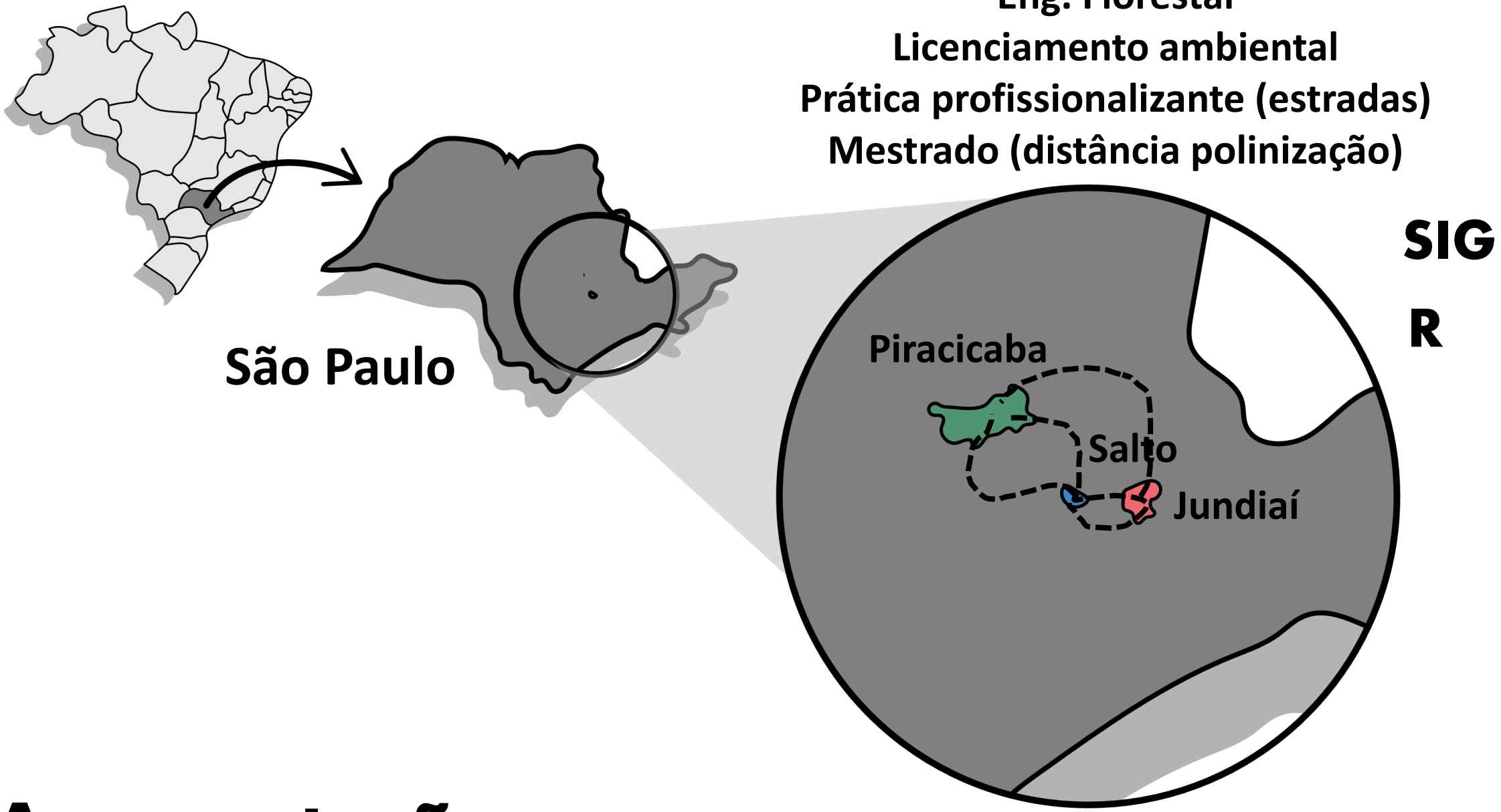
PG – Recursos Florestais (ESALQ/USP)

Vanessa Erler Sontag

Illus scientia


"Cachoeiras do Rio Piracicaba em Saltos
História, cultura e realidade
Universitário
Praça Alvaro Guião n.o 121 - Centro - Fone 483-2700
1º colocado
- Categoria I -
Vanessa E. Sontag
3ª série

Eng. Florestal
Licenciamento ambiental
Prática profissionalizante (estradas)
Mestrado (distância polinização)



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Apresentação

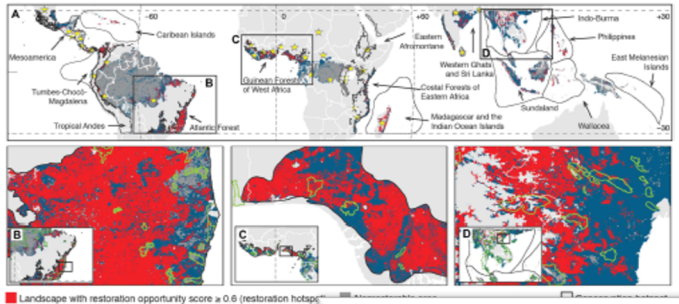


Fig. 3. Restoration hotspots, conservation hotspots, and Bonn Challenge c landscapes in lowlands and for biodiversity conservation in the global tropics (Bonn Challenge (**A**). Expanded areas within the biodiversity conservation hotspot boundaries and geographic names is simply for display purposes and does not im

of this work toward this goal. Moreover, our work goes beyond the ass ment of this area-based target (*34*) to include other important varial to assess the potential contribution of restoration to biodiversity c servation. Our analysis could contribute to the post-2020 biodiver framework, which is under negotiation through the Convention Biological Diversity to replace the current 2011–2020 Strategic Pla

Viewing restoration as a means to achieve certain goals and as an end in itself, restoration commitments should ideally incl the potential level of benefits that restoration can provide as crite for identifying target areas. By doing so, the limited time and sources available to invest in restoration activities can be optimiz and high levels of benefits could be provided even in cases wh restoration is implemented in only a portion of the area commit (*35*). Thus, our findings could be used to optimize the implemen tion of restoration efforts in the context of the Aichi Target making better use of the limited time left before its expiration 2020, and to guide the post-2020 restoration plans of the Conv tion on Biological Diversity.

The implementation of forest and landscape restoration comm ments and targets also relies on many other socioenvironmental fact that were not included in this study, such as land tenure security, l disturbance factors, or legal instruments (*5*, *36*), which dema attention when planning restoration at the local level. The benefit restoration could also be improved if complementary criteria are cluded in the analysis, such as the use of KBAs to identify areas wh restoration could be more relevant to support the persistence of uni biodiversity groups (*37*). Recognizing the rights and livelihood local peoples is critically important when implementing restorat projects (*38*, *39*). Other types of land-use changes geared toward eit protection (i.e., creating protected areas) or production (i.e., indus alized agriculture or forestry plantations) have often failed to recogn

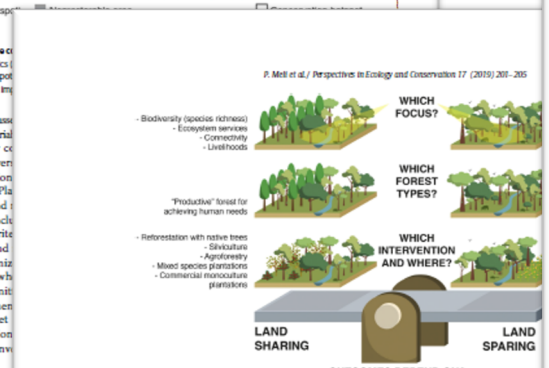


Fig. 1. Four critical questions to support decisions on forest and landscape restoration. The questions are illustrated with exam implementation under the two endpoints of the land sharing/sparing gradient.

predict (Fig. 1). In addition, the appropriateness of sharing/sparing is influenced by the biophysical characteristics of landscapes. For instance, mountainous regions may offer more opportunities for sparing, since marginal agricultural lands in steep slopes can be easily set aside to recover native ecosystems through natural regeneration (see Box 1). In regions dominated by intensive agricultur, policy instrument mandating or encouraging the recovery of native ecosystems in environmental fragile areas may foster sparing as well in small portions of the landscape (Rodrigues et al., 2011), while substantial increases in tree cover will rely in sharing approaches. Social actor's selection of restorative interventions and where in the agricultural landscape they are implemented will drive the outcomes of the future restored forest landscape.

4. What are the main factors influencing restorative intervention outcomes? Finally, the selection among sharing/sparing approaches and their activities will be also related to factors that influence restoration outcomes. Configuration of the landscape to be restored, namely the proportion and spatial distribution of the remaining natural forests in the surrounding matrix, would determine these outcomes. For instance, ecological restoration should focus (at least on its first stages) on establishing new forested areas that provide a vegetation structure able to support water-, soil-, and climate-related ecosystem services while providing habitat for wildlife (see 1), especially if total remaining native forest cover in the landscape is low (<30%; Banks-Leite et al., 2014). These areas may be better restored under sparing schemes while sharing schemes may be used in fragmented landscapes that still maintain some proportion of forest cover. These fragmented landscapes are very common in the tropics, where restorative interventions usually work at local scales and focus on particular landscape components (e.g., riparian or headwater areas) or functions (e.g. landscape connectivity for biodiversity), but allowing production (Meli et al., 2017). If there is very little remaining natural forest, FLR goals could increase forest extent and quality in the landscape (Hodgson et al., 2011), but also enhancing the landscape matrix through wildlife-friendly agriculture (Melo et al., 2013; Crespin and García-Villalta, 2014; Box isolated trees or small forest ing 'simple' crops and pastur increasing diversity, which agriculture may involve biodi learning from traditional farm organic agriculture, and restor as hedgerows to benefit wildl (Rey Benayas and Bullock, 201 this could help a small scale b culture are needed. Both appro matrix will determine land a for restoration.

At the same time, social in be combined to understand land-use configurations. In a sparing can be socially contro hoods for people, opportunities should be also evaluated in the context of market, institutional and political factors, to be appropriately selected for different environmental and socioeconomic contexts and sustainable in time and (Brancalion et al., 2016). For instance, sparing policies may convey governments to solve initial financing and educational and cultural barriers for producers (mostly the local ones) to adopt more technologically advanced agricultural systems (Brancalion et al., 2012; Latawiec et al., 2014). Finally, land sharing/sparing decisions in FLR should also consider stakeholder preferences and livelihoods, while navigating conflicts among stakeholder interests and power asymmetries among them.

Recommendations for forest and landscape restoration in the tropics

FLR approaches will depend not only on degradation levels but also on the desired outcomes (Chazdon, 2008), working scales, and stakeholders' interests. Typically, FLR will need both land sharing and land sparing to fulfill its specific goals and achieve

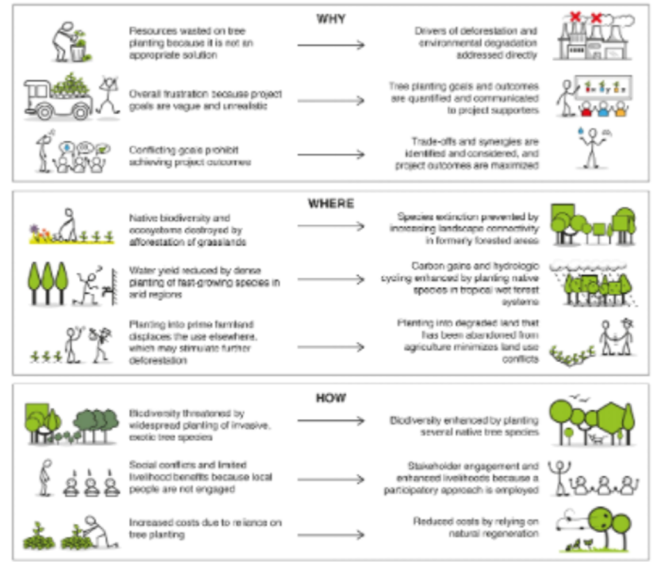


FIGURE 1 Outcomes depend on why, where and how tree planting is done

Tree planting can be especially problematic in native non-forest ecosystems (Veldman et al., 2015), which are often overlooked by restoration and conservation policies. Tree planting can destroy the rich and unique biodiversity of ancient grasslands and savannas, in which many herbs and grasses are shade-intolerant and adapted to disturbances such as grazing and fires (Bond, 2016). Therefore, defining whether a target area was historically covered by forests is not a mere detail, but is one of the most important steps of a reforestation initiative (Figure 2).

Changes to the water cycle provide a good example of the complex effects of tree planting. At the catchment scale, increasing tree cover often reduces local water yield due to increased evapotranspiration (Filoso, Bezerra, Weiss, & Pereira, 2017), particularly in moist and regions (Farley, Jobbágy, & Jackson, 2005). At the regional scale, the added evapotranspiration of planted trees contributes to moisture redistribution (Ellison et al., 2017) and cloud formation through the emission of volatile organic compounds that serve as moisture condensation nuclei (Spracklen, Bonn, & Carslaw, 2008). However, the additional rain may fall on areas far beyond the project boundaries. For instance, an important share of the rainfall that sustains agriculture in Brazil results from the moisture produced in the Amazon (Lovejoy & Nobre, 2018). The impacts of tree planting on climate are even more uncertain. Global estimates of the carbon sequestration potential of forest regrowth vary more than 10-fold (Fuss et al., 2018), and there are multiple feedback loops with albedo, carbon dioxide concentration in the atmosphere, emissions by trees of volatile organic compounds that are potent greenhouse gases and changes in rainfall patterns that complicate the assessment of the overall climatic impacts of tree planting (Lewis, Mitchard, Prentice, Maslin, & Poulter, 2019; Swingland et al., 2002). Quantifying the final balance of the multiple hydrological processes and climatic feedback is a major research challenge (Ellison et al., 2017). Moreover, the high

2 | MATERIALS AND METHODS

2.1 | Experimental plantings

2.1.1 | Experiment setup

We established experimental plantings in three municipalities distributed across the eastern portion of the Atlantic Forest (Site 1: Aracruz-Espirito Santo, Site 2: Mucuri-Bahia, and Site 3: Igrapiúna-Bahia; Table S1; Figure 1). The experiments were established as a

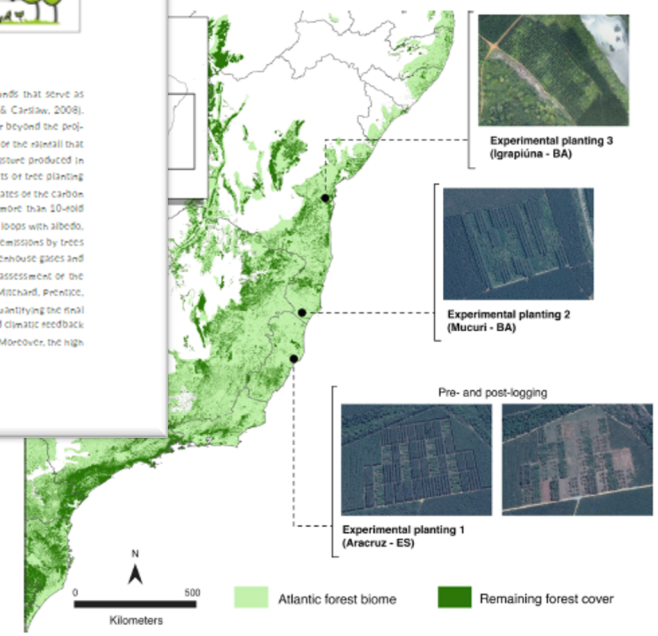


FIGURE 1 Study sites within the Atlantic Forest of Brazil. Black lines in Atlantic Forest map indicate state boundaries. See Table S1 for biophysical and experimental site details. Other treatments were tested in these sites and can be seen in the images (e.g. eucalypt monocultures, intercropping eucalypts and native species in single lines), but these treatments are not discussed in this paper

How to (seriously) read a scientific paper

Elisabeth Pain – Science
Março de 2016

I start by reading the abstract. Then, I skim the introduction and flip through the article to look at the figures. I try to identify the most prominent one or two figures, and I really make sure I understand what's going on in them. Then, I read the conclusion/summary. Only when I have done that will I go back into the technical details to clarify any questions I might have.
- ***Jesse Shanahan***, *master's candidate in astronomy at Wesleyan University in Middletown, Connecticut*

Resumo – olhadela introdução - figuras

I also check if there are references that I may be interested in. Sometimes I am curious to see who in the field has—or more likely has not—been referenced, to see whether the authors are choosing to ignore certain aspects of the research. I often find that the supplementary figures actually offer the most curious and interesting results, especially if the results relate to parts of the field that the authors did not reference or if they are unclear or unhelpful to their interpretation of the overall story.
- ***Gary McDowell***, *postdoctoral fellow in developmental biology at Tufts University in Medford, Massachusetts, and visiting scholar at Boston College*

Figuras suplementares - resultados mais curiosos e interessantes

As editor-in-chief of *Science*, I have to read and comprehend papers outside of my field all the time. Generally, I start with the corresponding editors' summaries, which are meant for someone like me: a science generalist who is interested in everything but dives deeply only into one field. Next, I check to see if someone wrote a News article on the paper. Third, I check to see if there is a Perspective by another scientist. The main goal of a Perspective is to broaden the message of the paper, but often the authors do a great job of extracting the essence of the article for non-specialists at the same time.

Then I tackle the abstract, which has been written to broadly communicate to the readership of the journal. Finally, I move on to the paper itself, reading, in order, the intro, conclusions, scanning the figures, and then reading the paper through.
- ***Marcia K. McNutt***, *Editor-in-Chief, Science journals*

1 - Stalker
2 - resumo
3 - introdução
4 - conclusão
5 - figuras
6 - restante do artigo

https://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper

Fonte: Researchgate

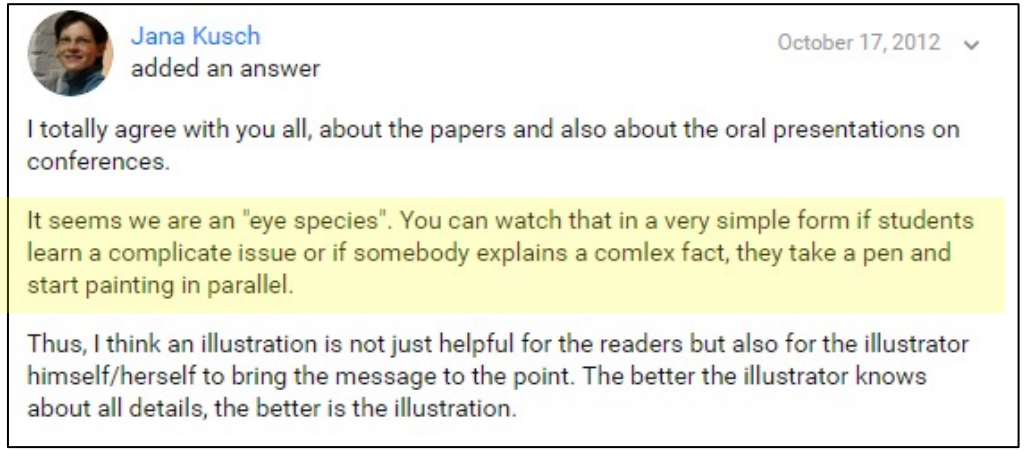
Does a (review) paper with good figures get more citations because of the figure?

In my opinion it does. Especially for review papers. A paper can benefit substantially from good visualizations, it makes the content more understandable and clear. Other scientists like to cite this work over a paper more difficult to understand.

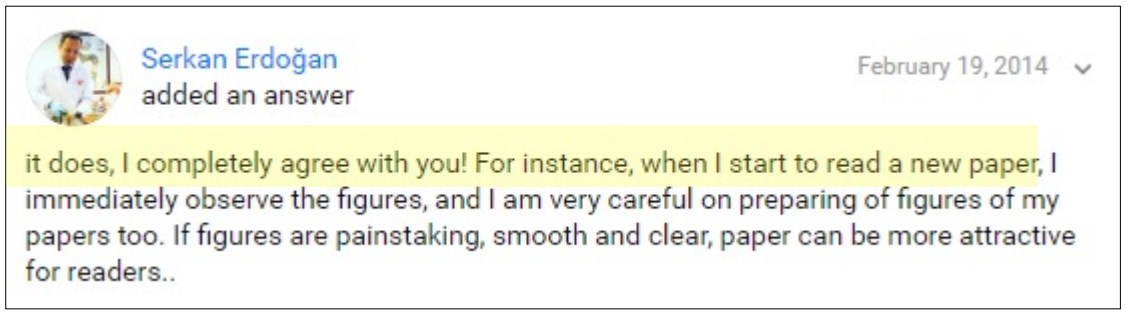
Moreover, scientists have presentations in meetings and seminars all the time. In the introduction, the best available figure in their field of work is used quite often. This will encourage people in the audience to write down the reference. I bet they will cite the original paper next time they write something related to the subject. (of course the research has to be good).

I'm very curious to hear your opinion about this.

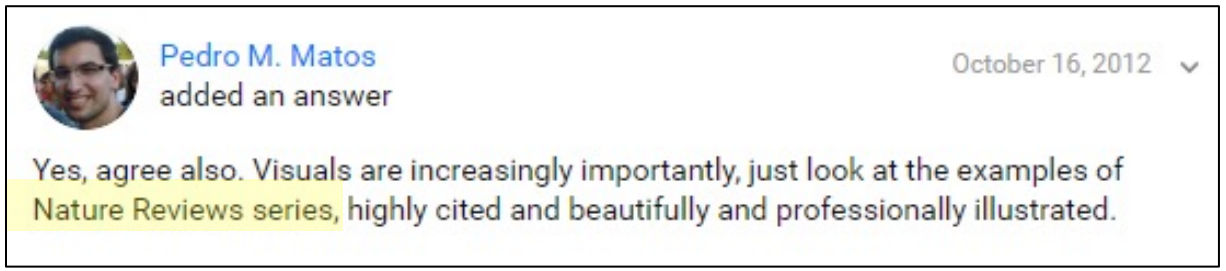
Cientistas preferem citar texto mais claros de entender e usam as figuras em apresentações e conferências



“Entendeu ou quer que eu desenhe?”

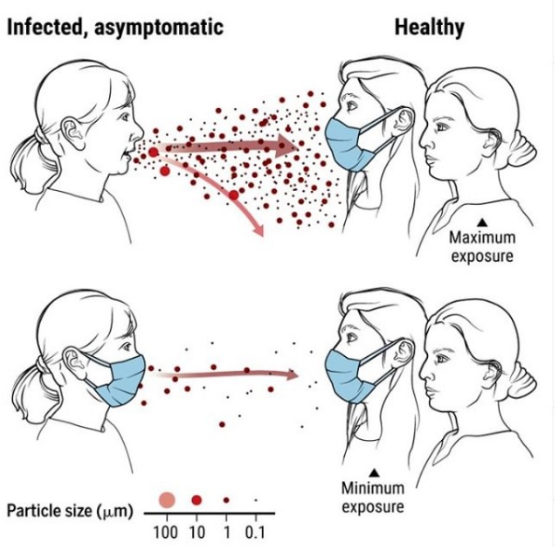


Antes de ler todo o artigo vê as figuras



Revistas grandes e alto fator de impacto dão atenção especial as figuras

Divulgação nas Redes Sociais



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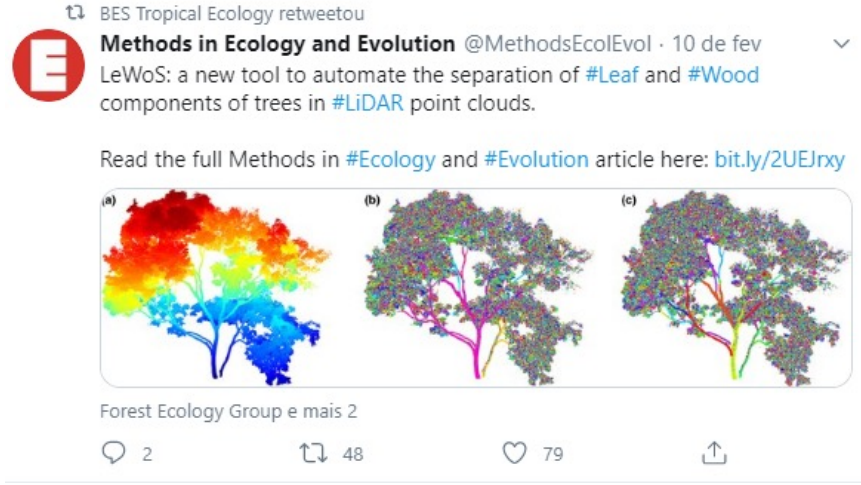
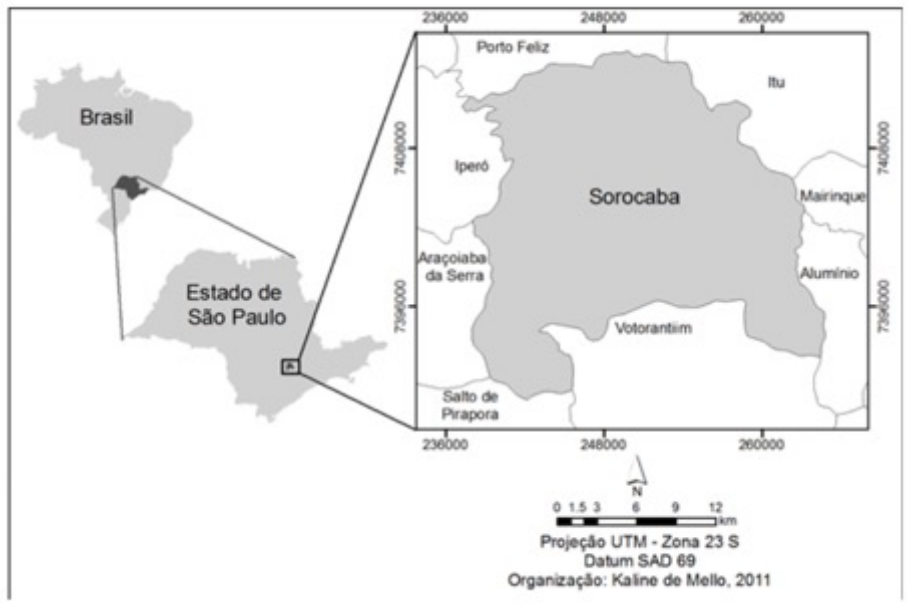


Facebook: @MethodsEcolEvol

CONSIDERAÇÕES INICIAIS

Considerações iniciais

A figura é necessária?



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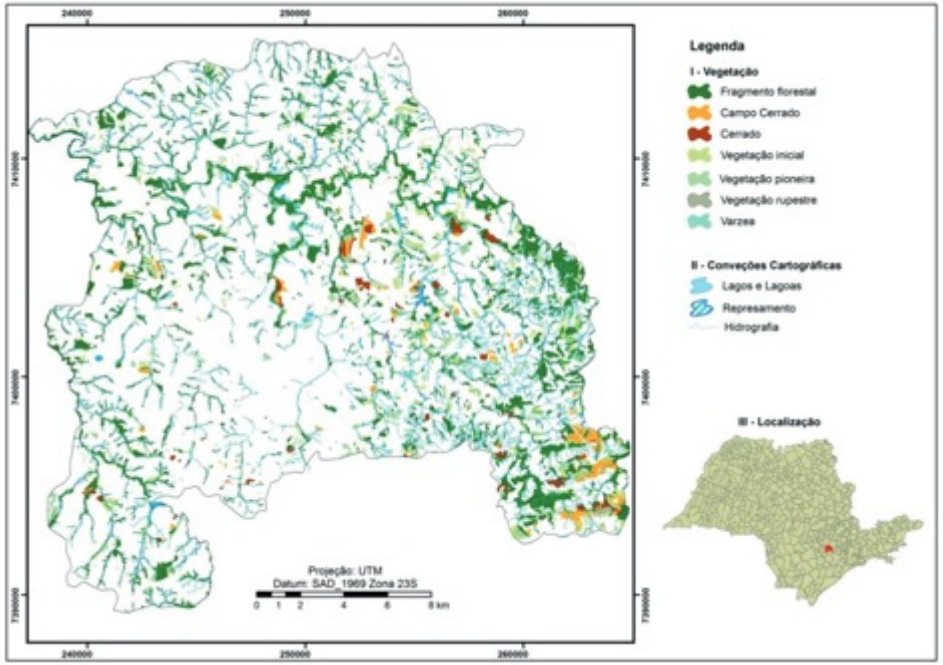

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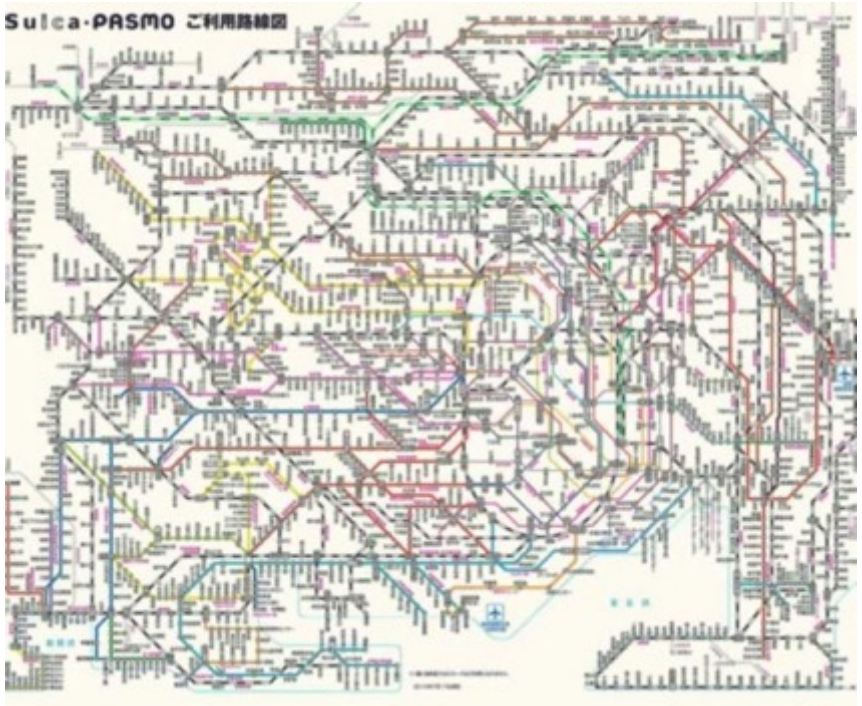
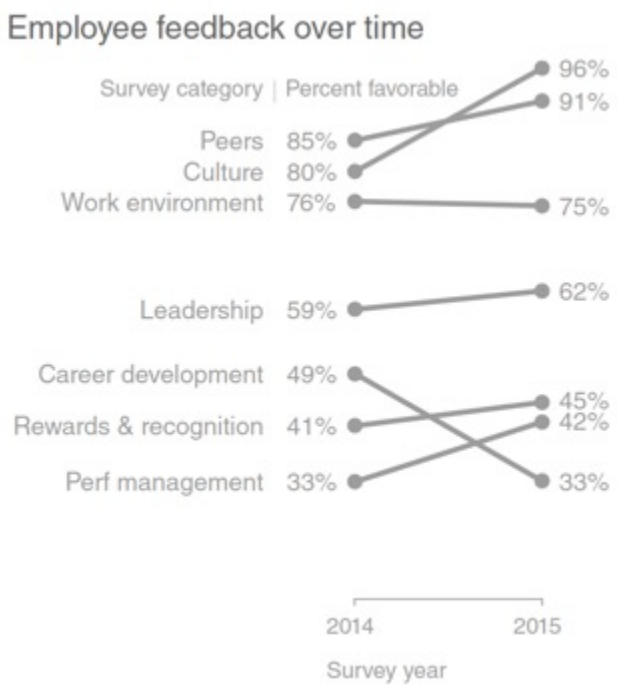
Considerações iniciais

A figura está mostrando o que é relevante?



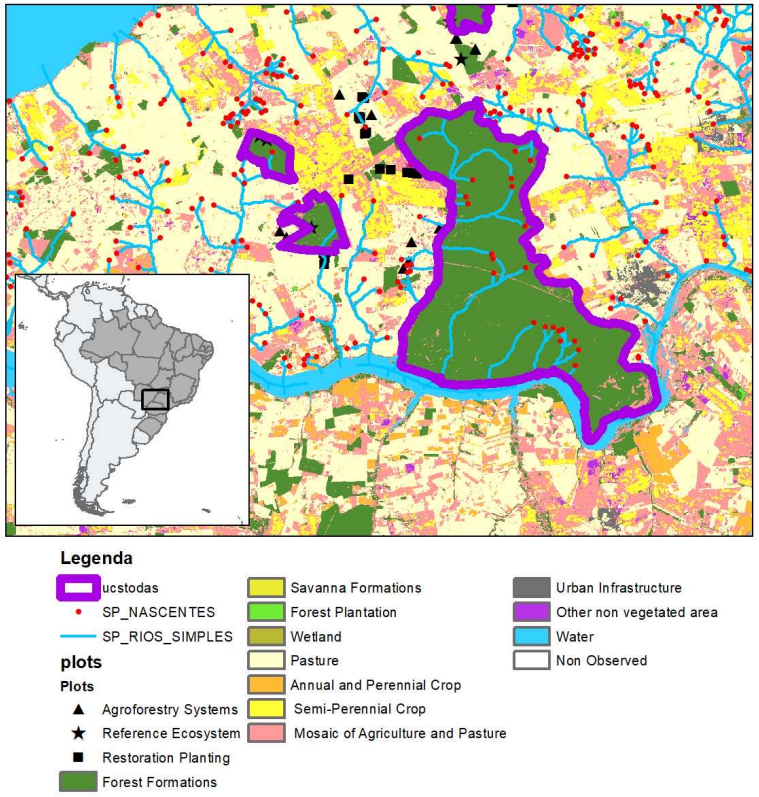
https://travelience.com/blog/train-chaos-how-to-master-the-japanese-train-system/

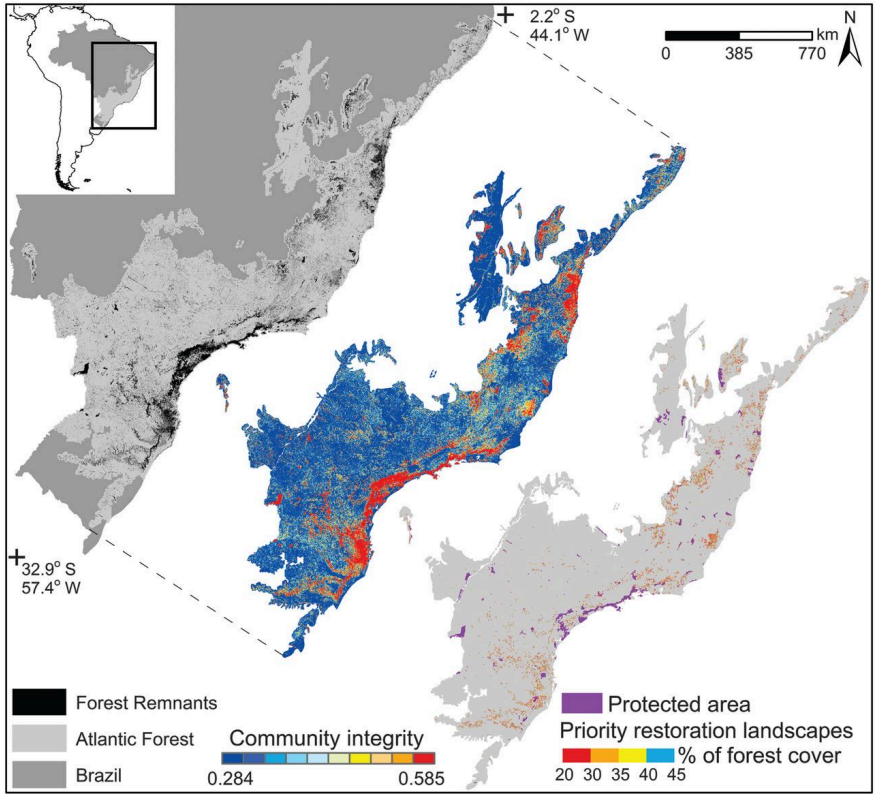


Storytelling with data – Cole Nussbaumer Knaflic

Considerações iniciais

A figura está mostrando o que é relevante?

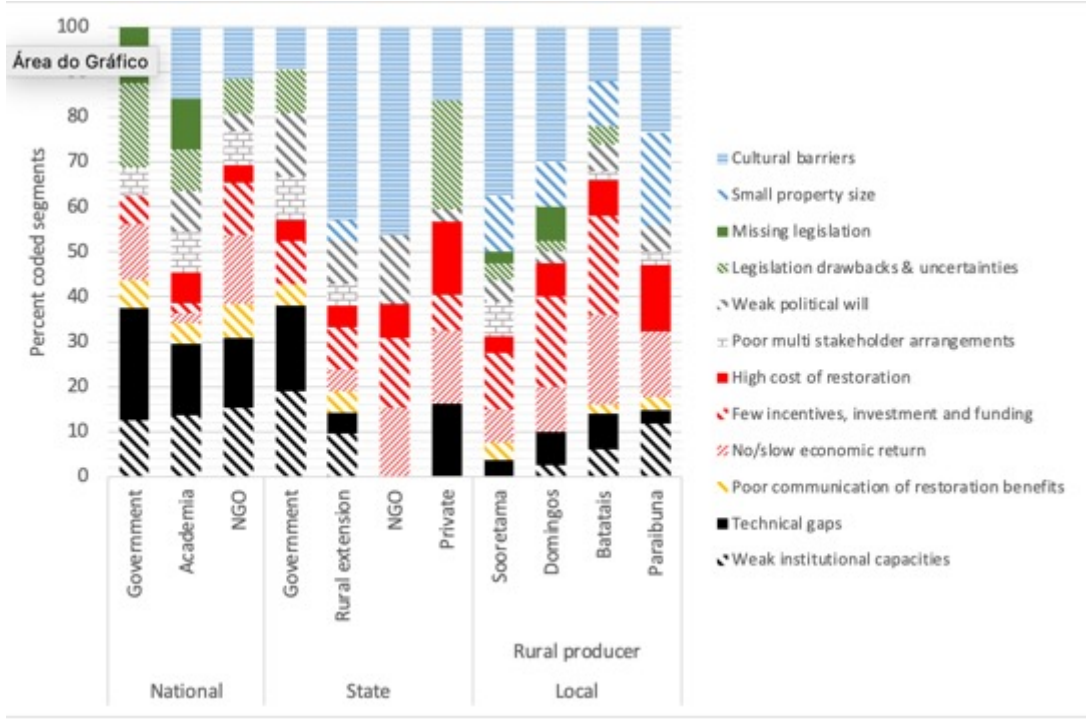


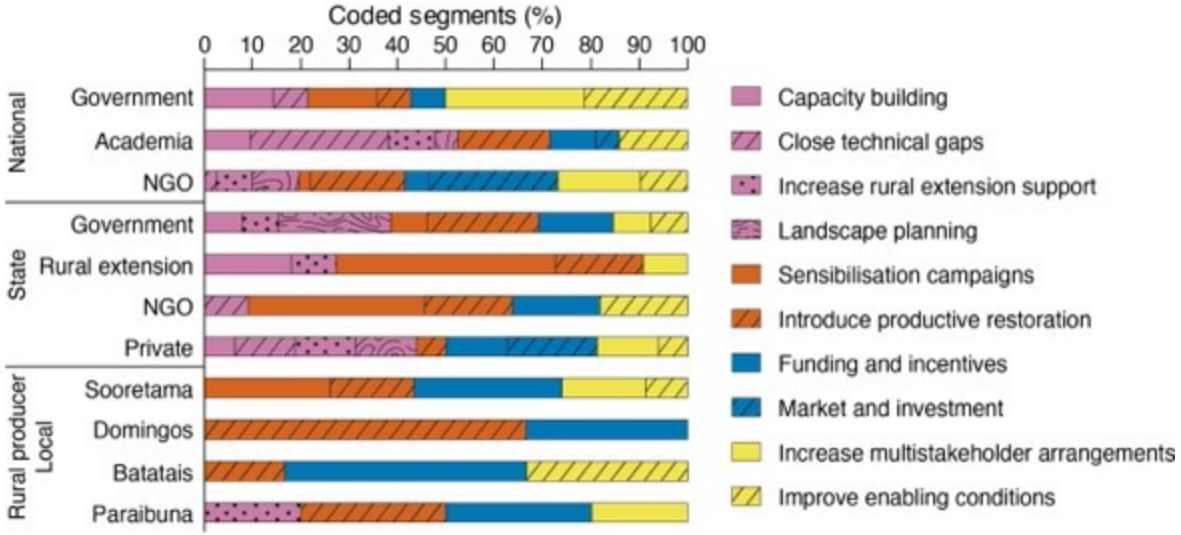


https://www.science.org/doi/full/10.1126/science.1255768

Considerações iniciais

Está clara? P&B x colorida

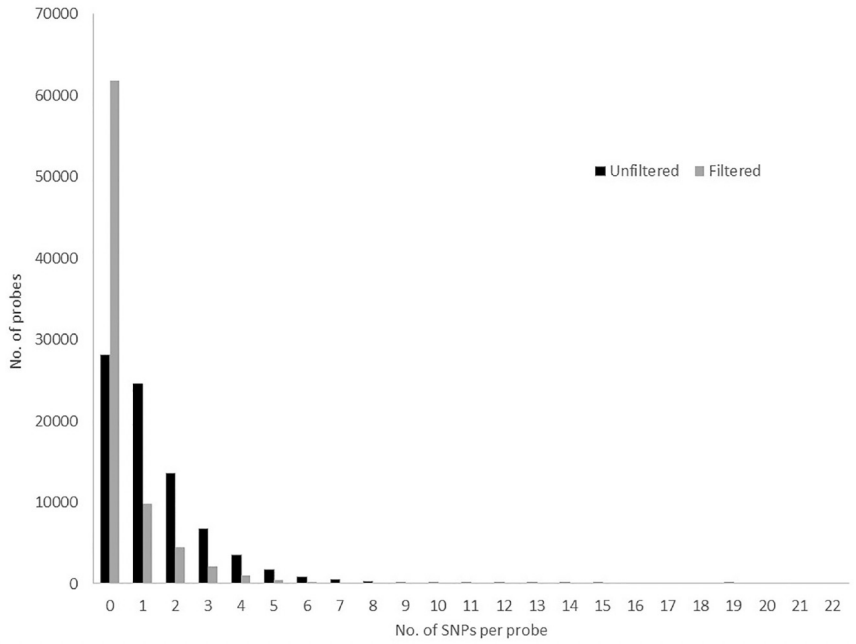




Em elaboração

Considerações iniciais

Procurar manter uma consistência ao longo do artigo. Estilo, cores, fonte, etc.



Exemplo artigo 1

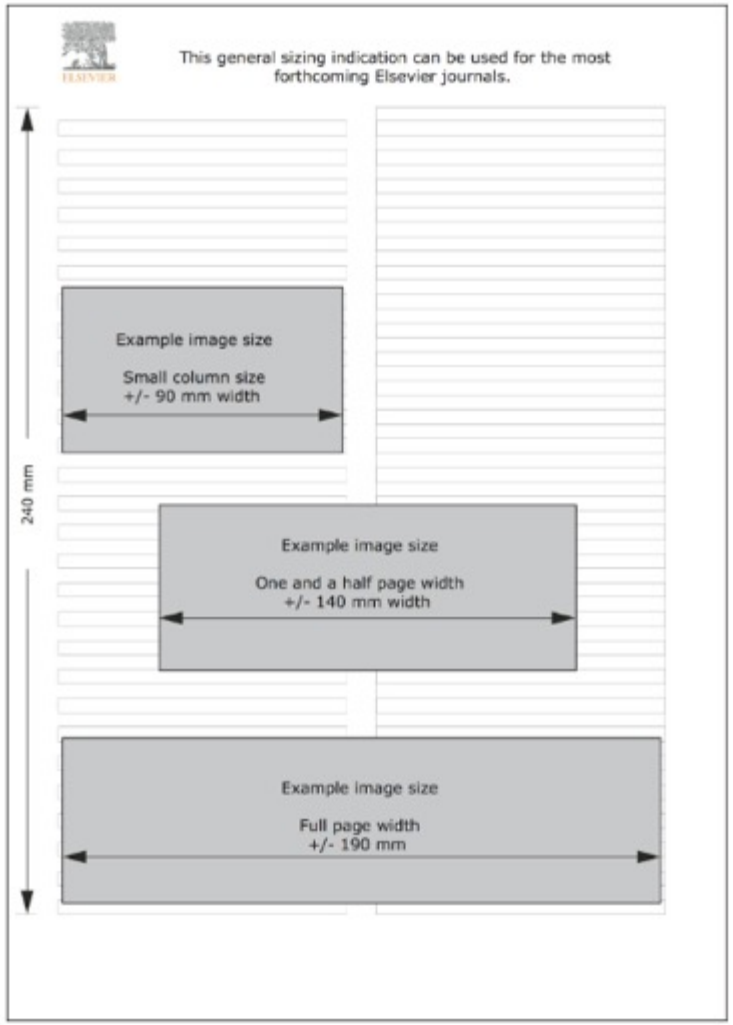
Exemplo artigo 2

Dica inicial

1° Confira as normas da revista.
“Nome de revista” author instructions

2° Veja as dimensões das figuras

3° Ajuste o tamanho da sua página*



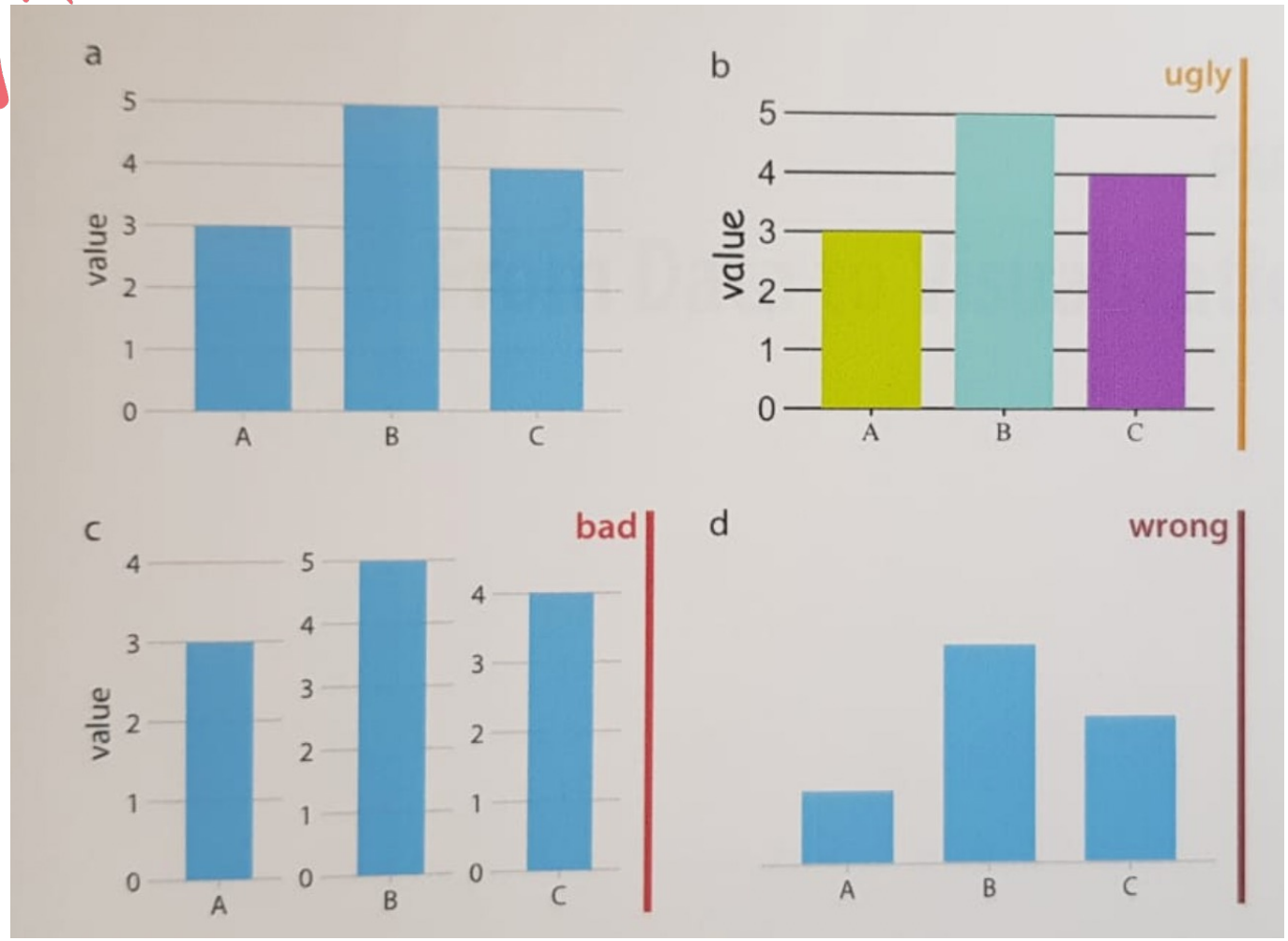
GRÁFICOS

Gráficos – dicas de como elaborar

Tipo de gráfico

https://www.data-to-viz.com/

Gráficos – feio, ruim ou errado?



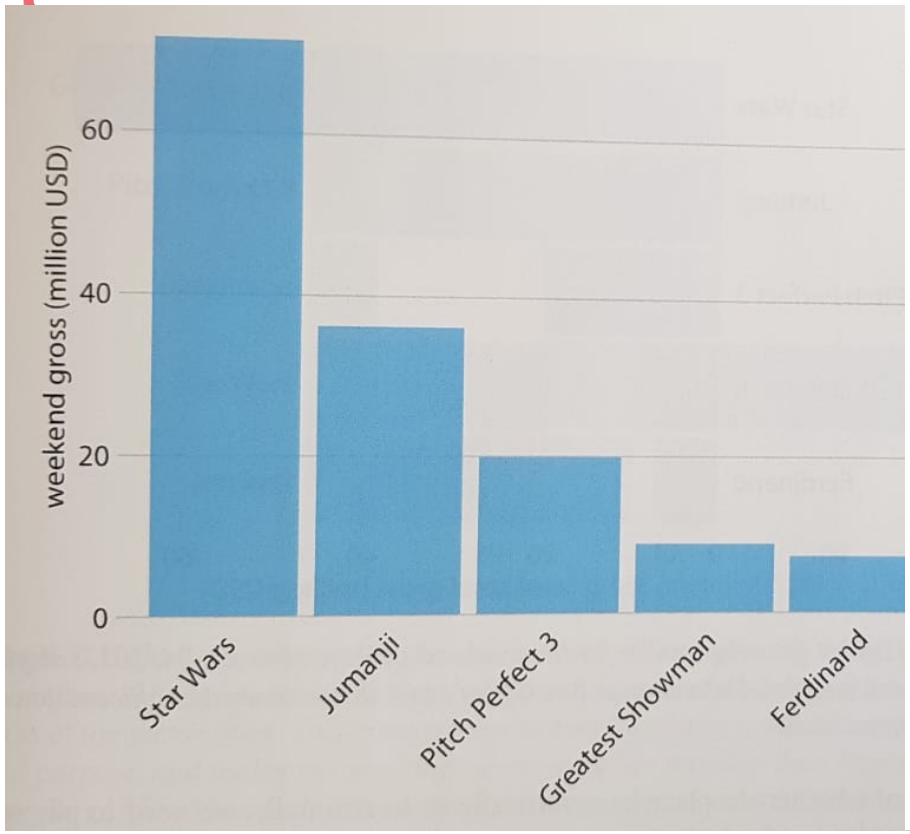
Feio: cores muito chamativas e sem sentido, grid muito chamativo, texto com diferentes fontes e tamanhos.

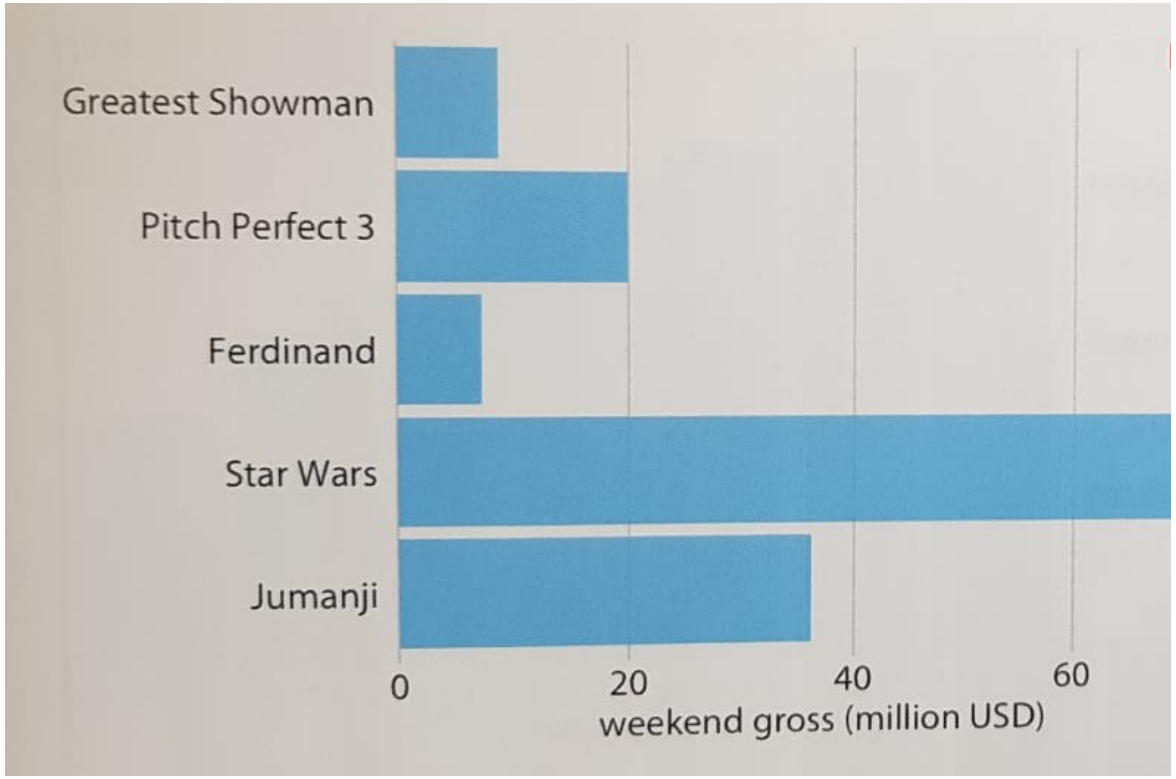
Ruim: Eixos desalinhados e com diferentes escalas. Pode causar uma interpretação errada apesar de estar correto.

Errado: Sem o eixo não se sabe ao certo o tamanho das barras.

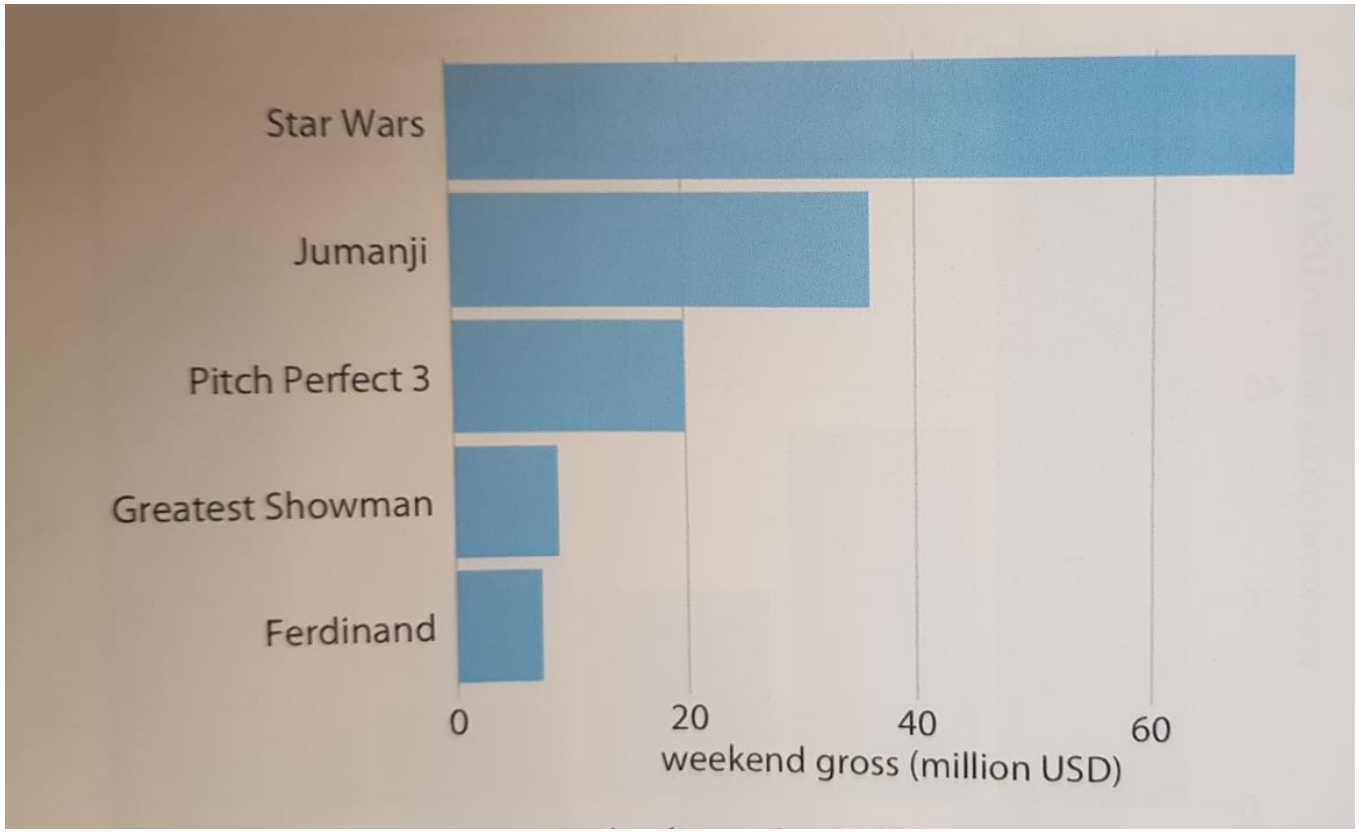
Fundamentals of Data Visualization – Claus O. Wike

Gráficos – feio, ruim ou errado?





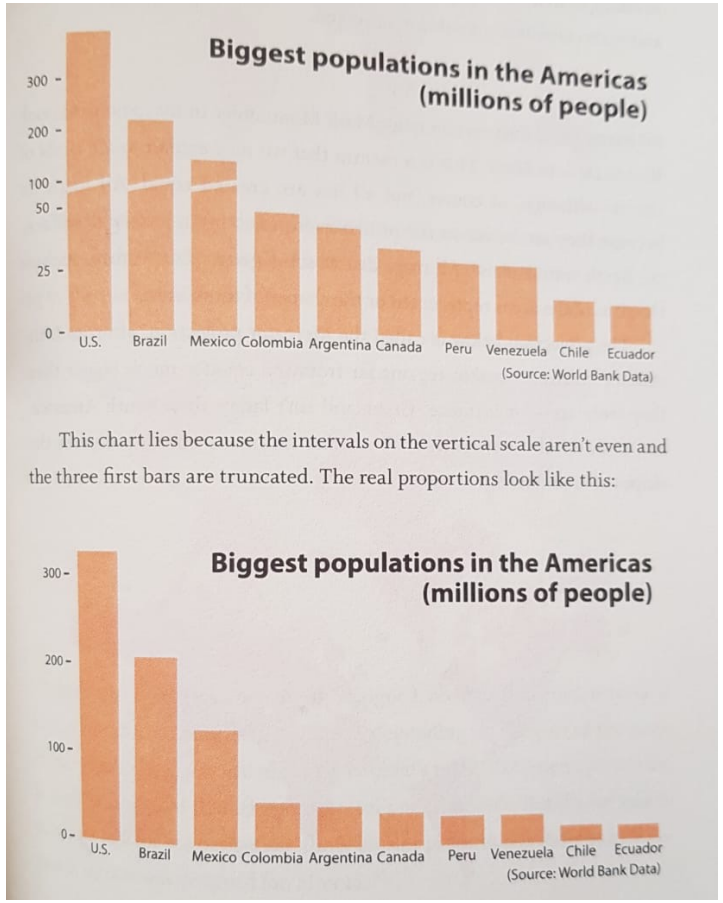
Gráficos – feio, ruim ou errado?

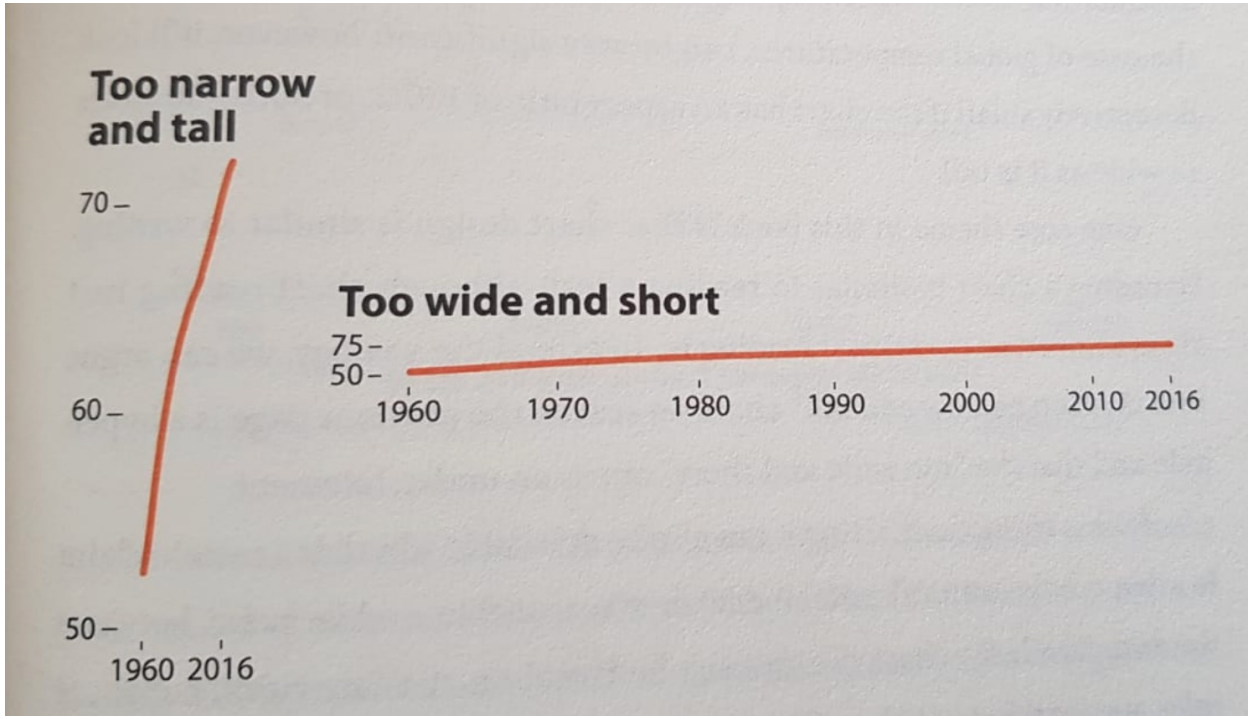


Bad (Vanessa)

Gráficos mentem...

...por serem mal desenhados

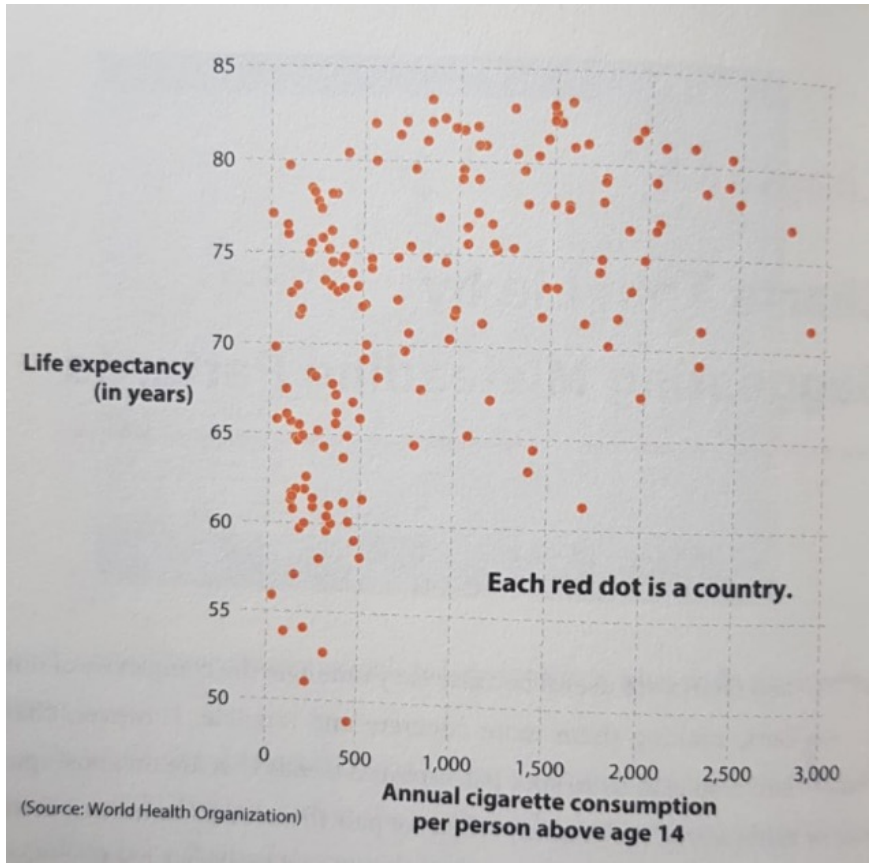


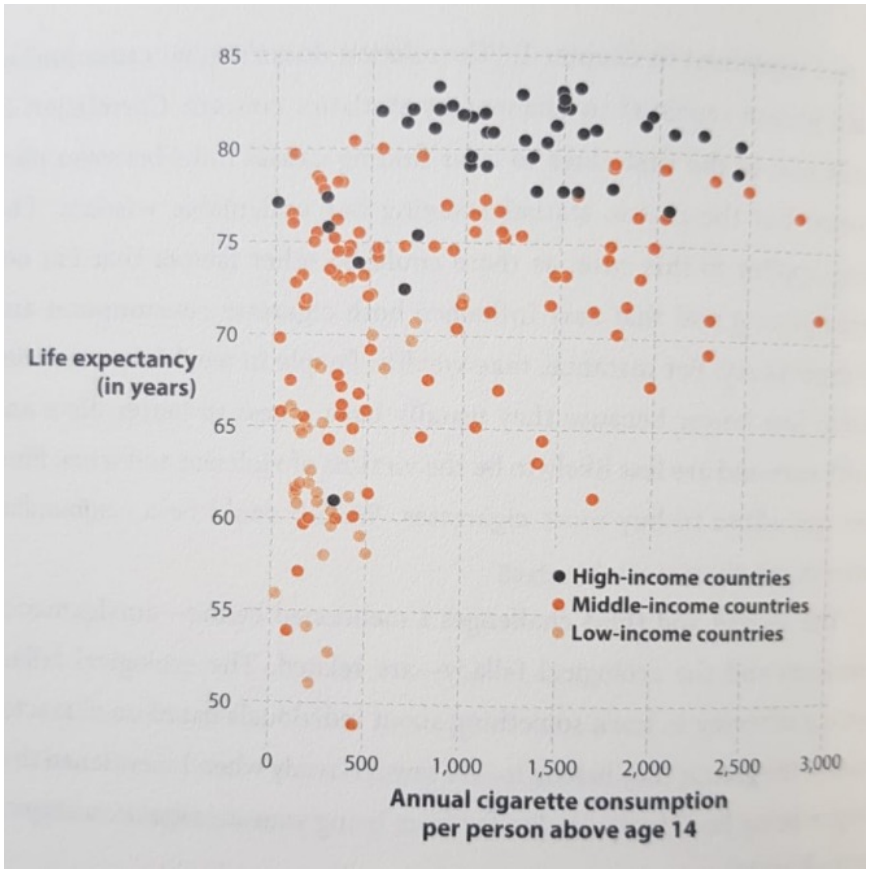


How charts lie – Alberto Cairo

Gráficos mentem...

...por sugerirem padrões enganosos

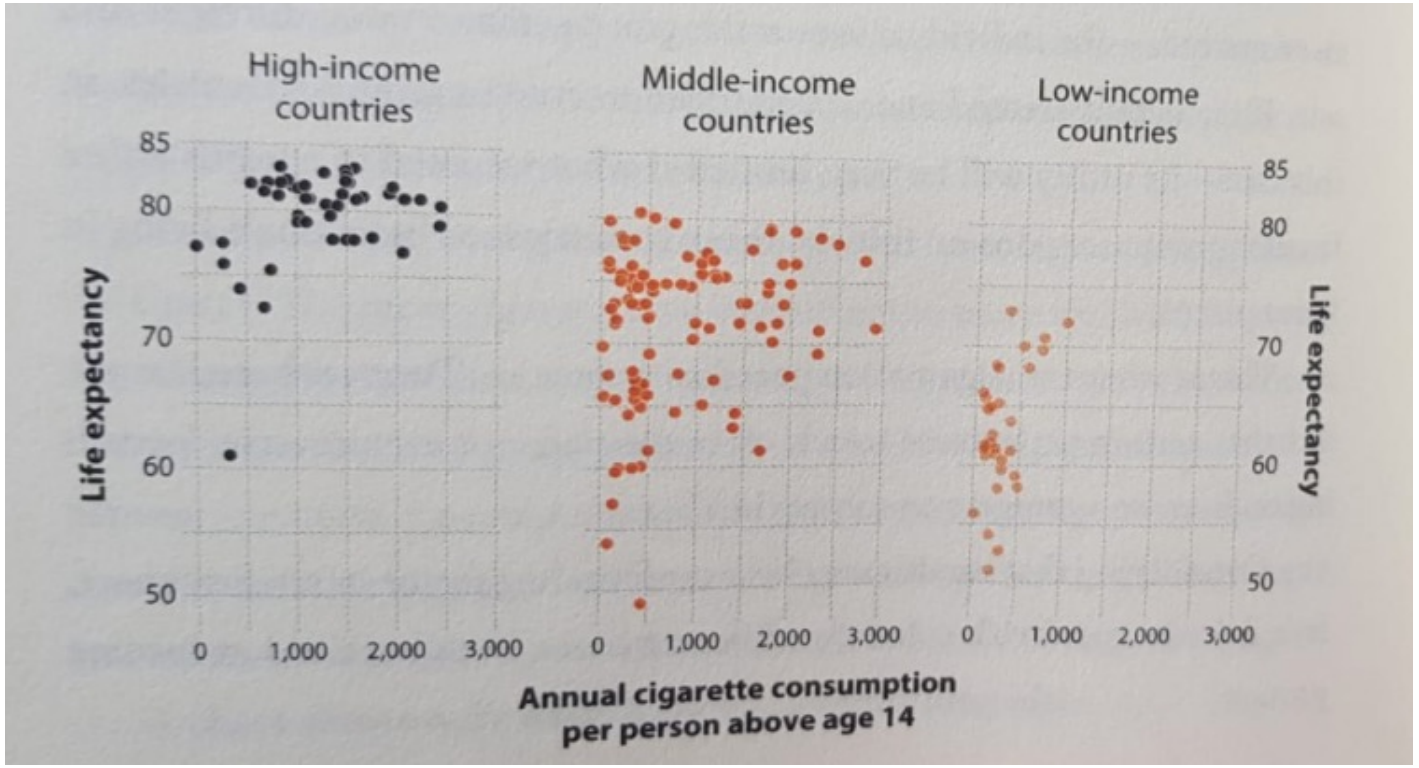




How charts lie – Alberto Cairo

Gráficos mentem...

...por sugerirem padrões enganosos



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Gráficos mentem...

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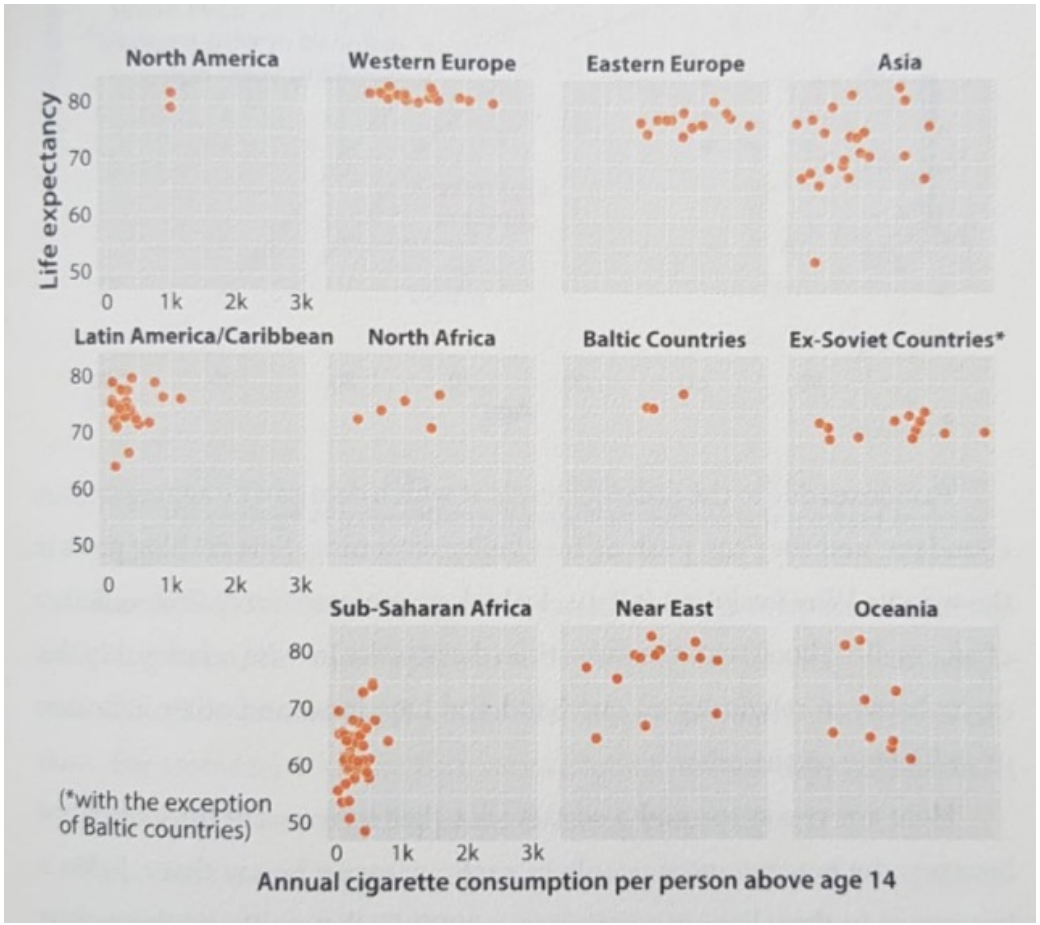
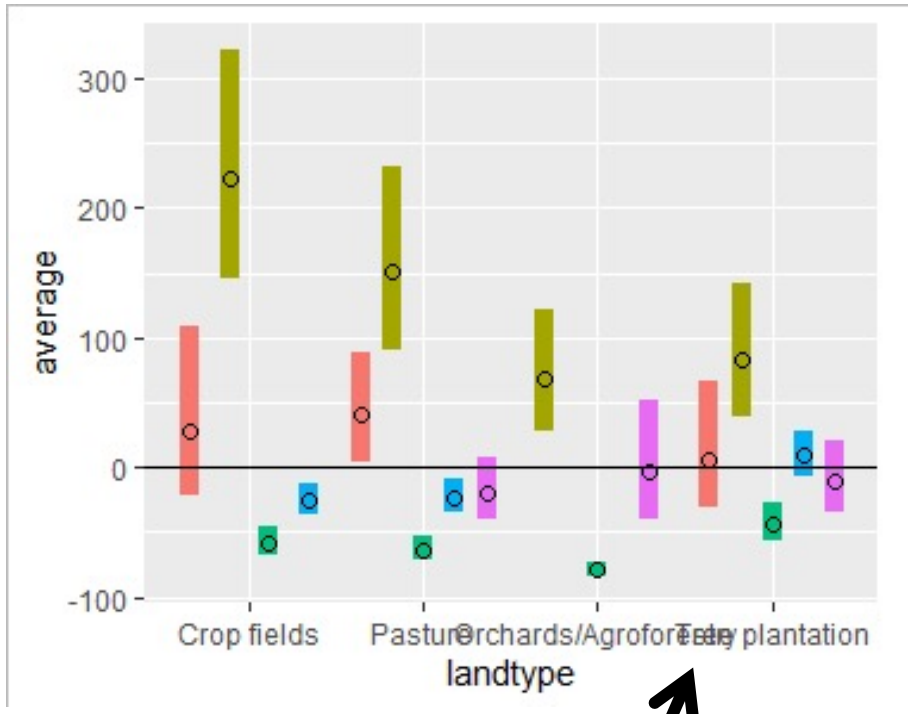
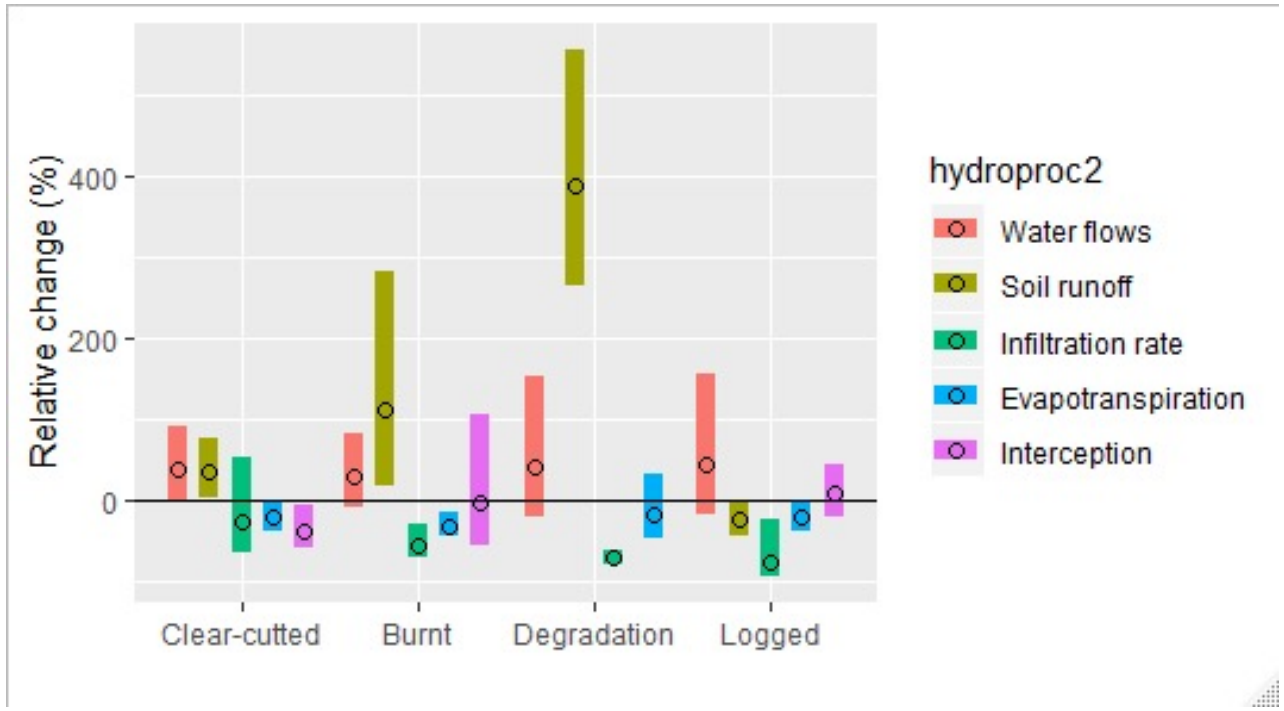


How charts lie – Alberto Cairo

Gráficos – dicas de como elaborar

Deixe o mais “limpo” possível:
`theme_bw()`



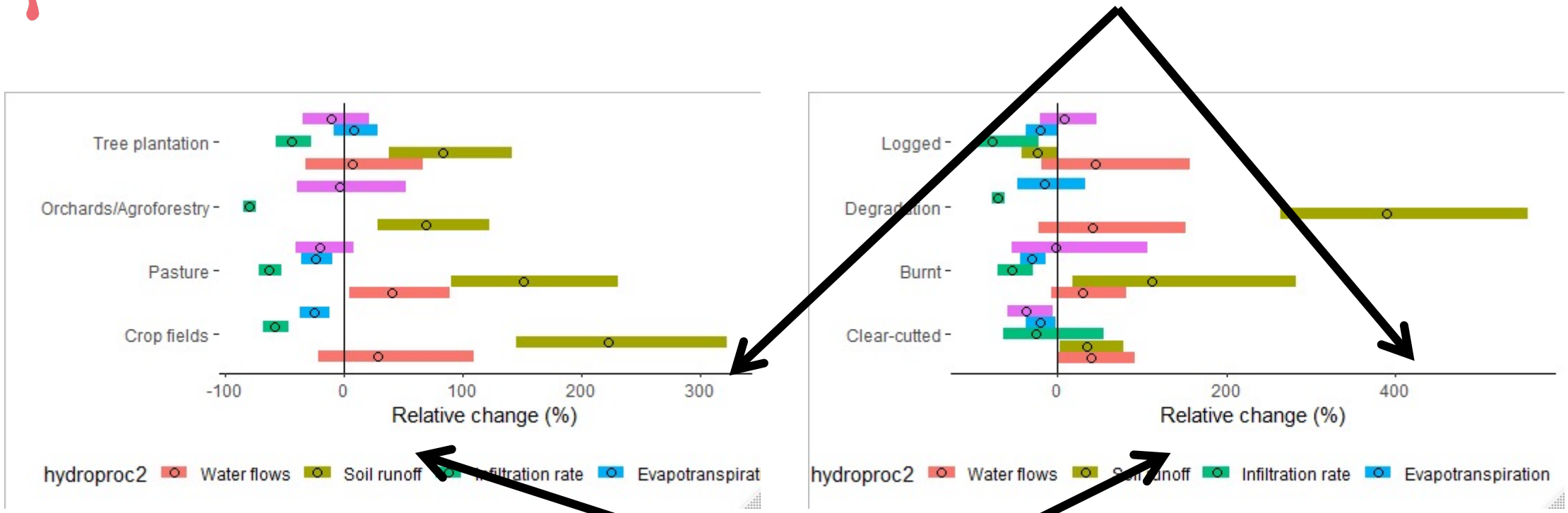


Palavras claras
`coord_flip()`

Gráficos – dicas de como elaborar

Procure alinhar os eixos e manter a mesma escala

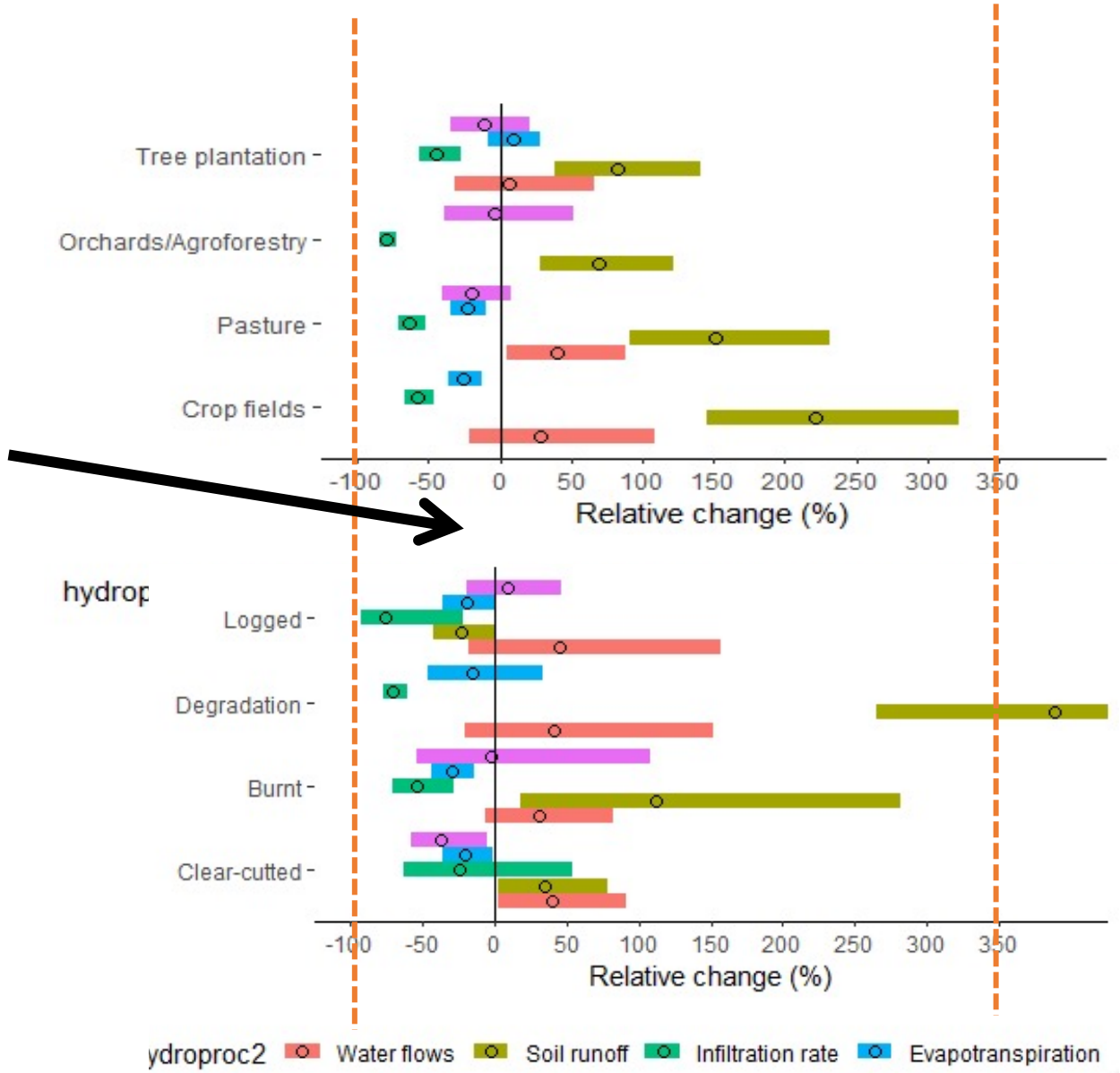
`scale_y_continuous()` e `ylim=`



Aproveite eixos com o mesmo título para definir a disposição da figura

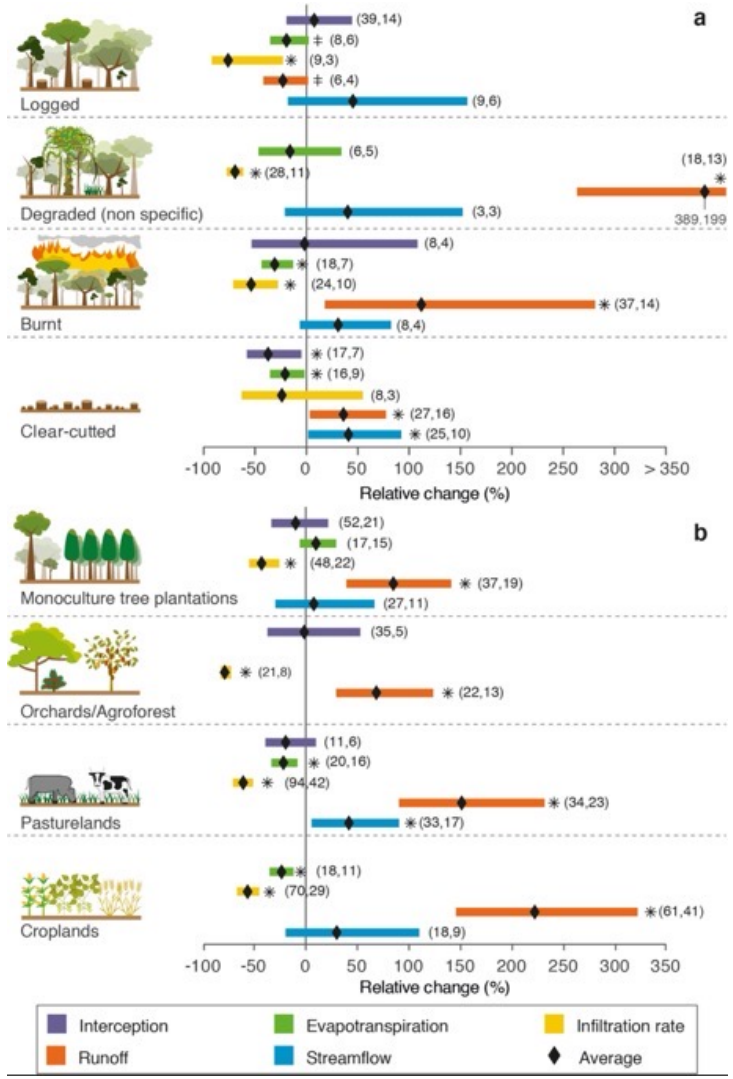
Gráficos – dicas de como elaborar

É possível retirar o título e os rótulos dos eixos



Gráficos – dicas de como elaborar

Por fim, arrume os detalhes. O gráfico deve ser autoexplicativo.



Gráficos – dicas de como elaborar

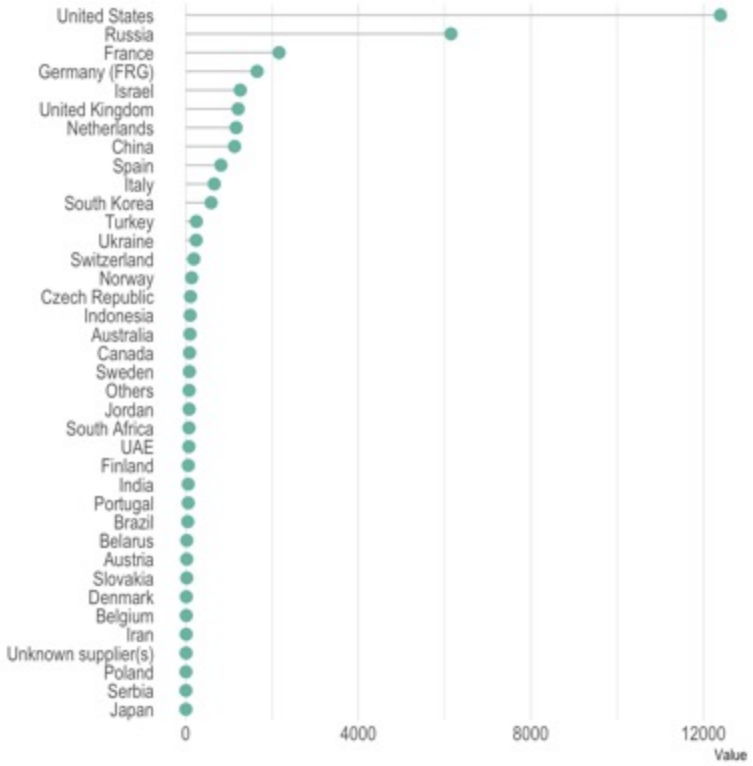
Inspiração

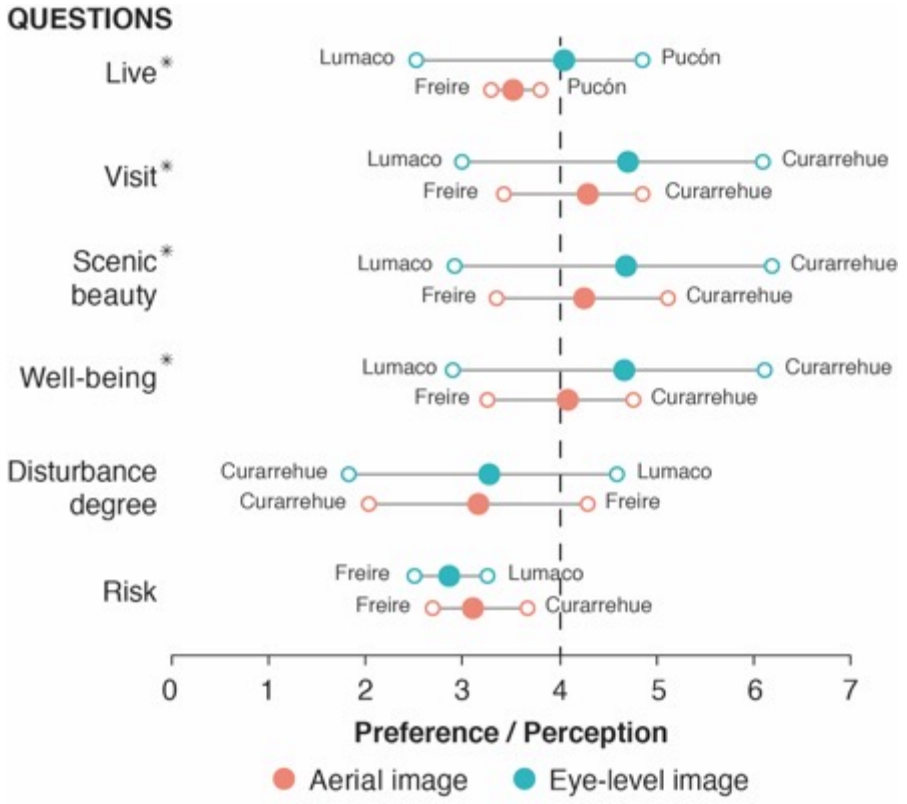
https://www.instagram.com/federicafragapane/

https://www.instagram.com/nadiehbremer/

https://br.pinterest.com/illusscientia/boards/

Casos





https://www.data-to-viz.com/caveat/order_data.html

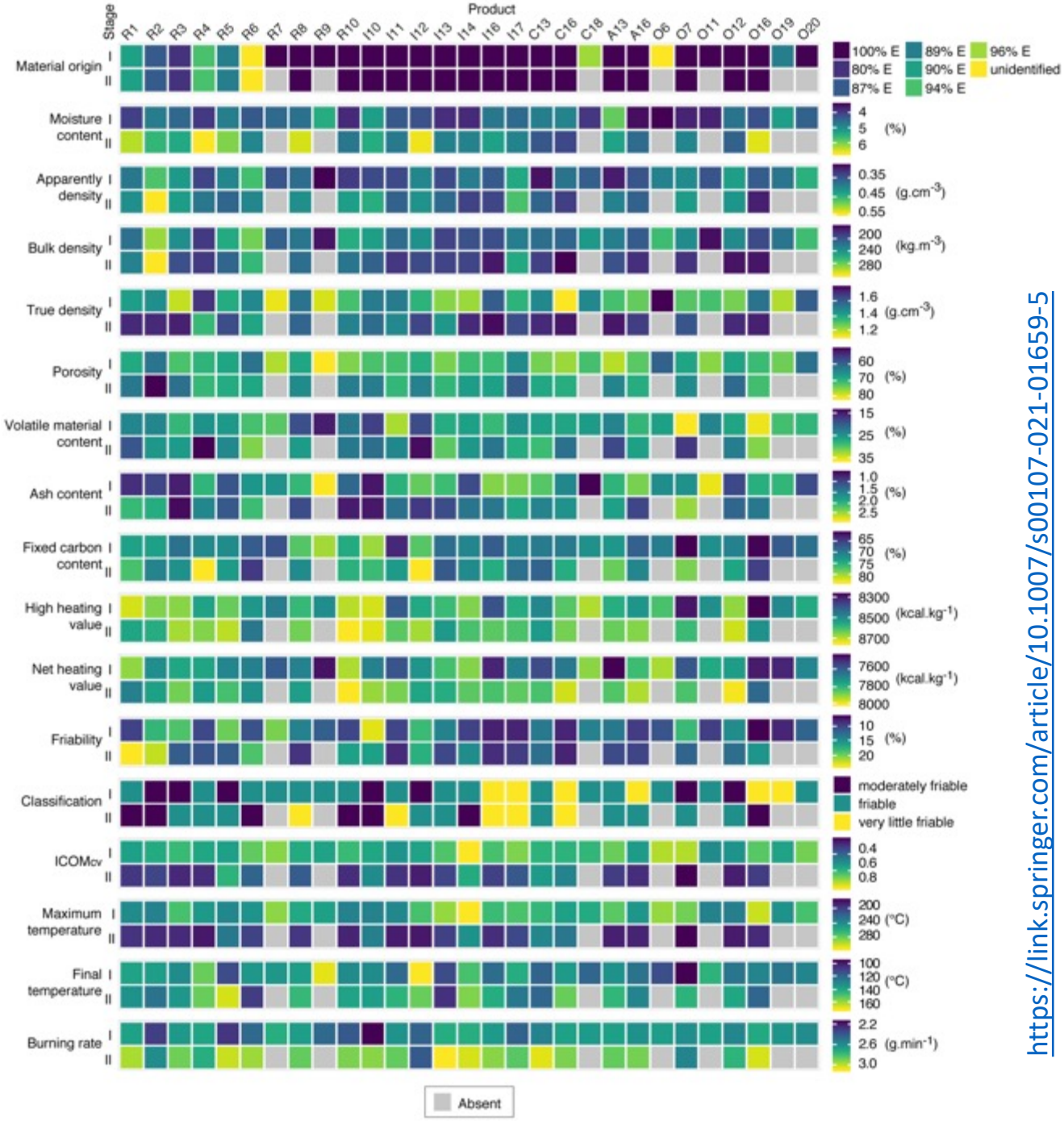
Em elaboração

Casos

6 tabelas = 1 figura

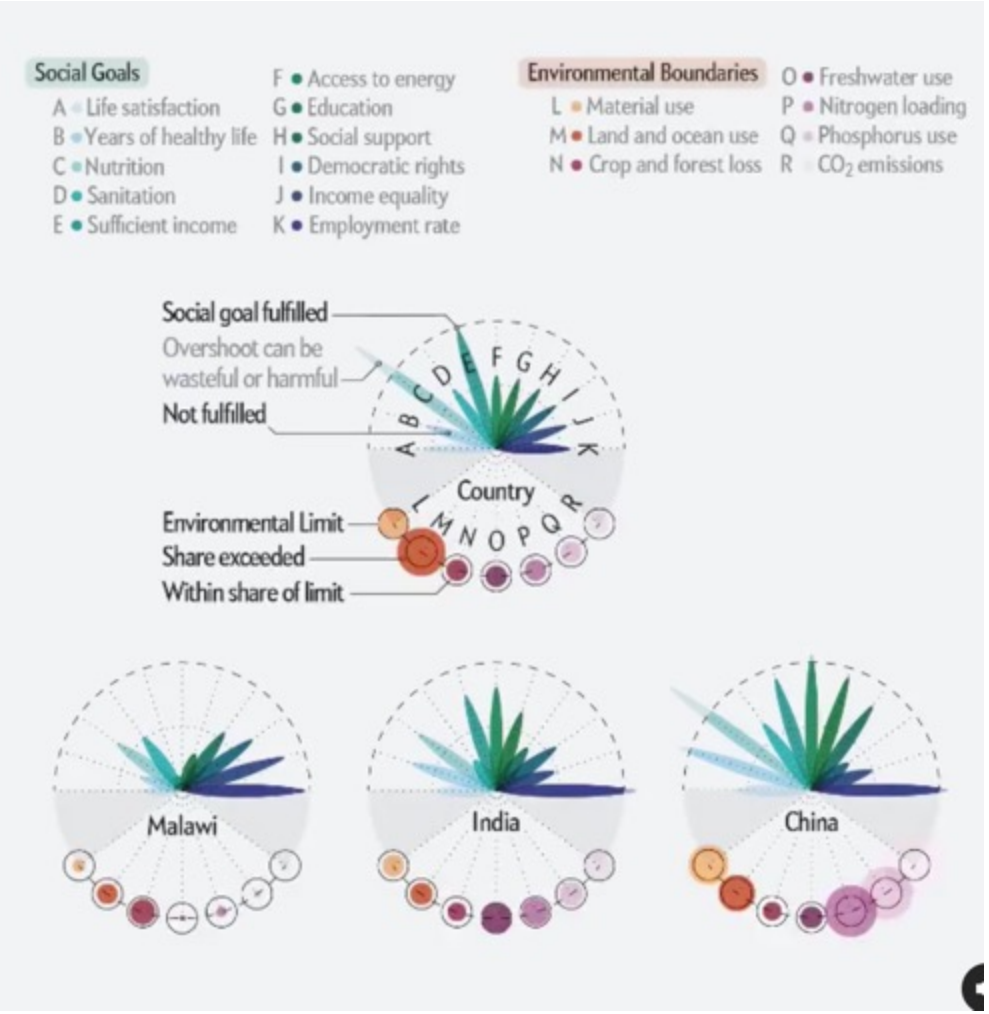
	A	B	C
Category 1	15%	22%	42%
Category 2	40%	36%	20%
Category 3	35%	17%	34%
Category 4	30%	29%	26%
Category 5	55%	30%	58%
Category 6	11%	25%	49%

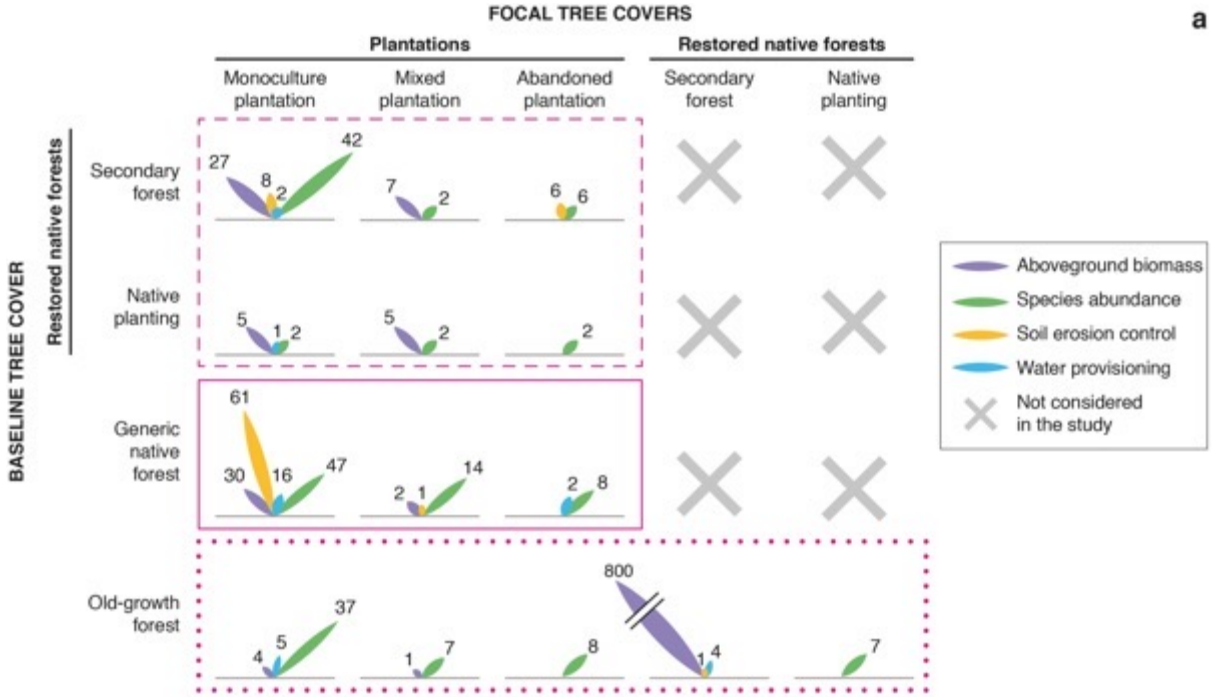
	A	B	C
Category 1	15%	22%	42%
Category 2	40%	36%	20%
Category 3	35%	17%	34%
Category 4	30%	29%	26%
Category 5	55%	30%	58%
Category 6	11%	25%	49%



https://link.springer.com/article/10.1007/s00107-021-01659-5

Casos

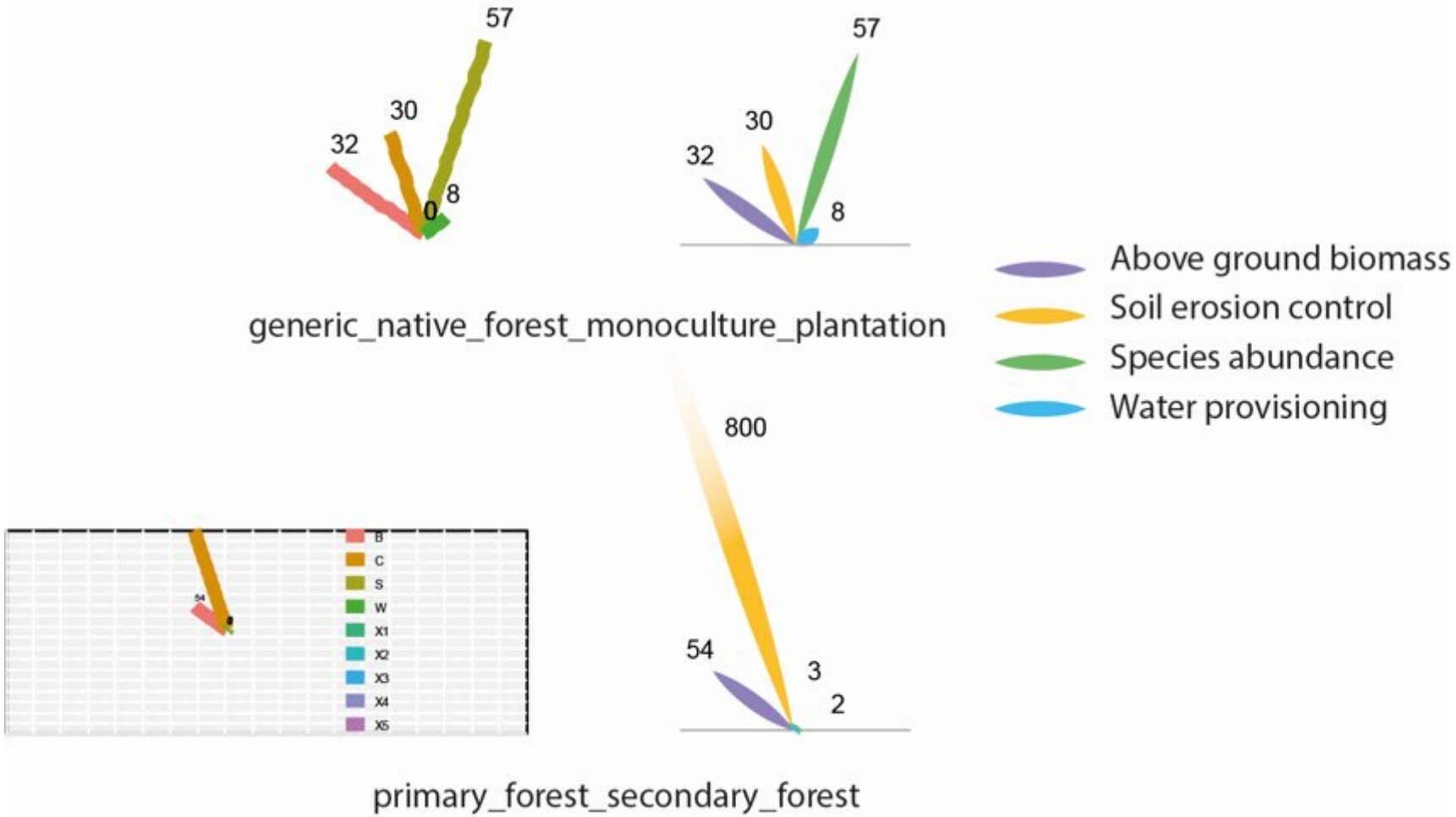




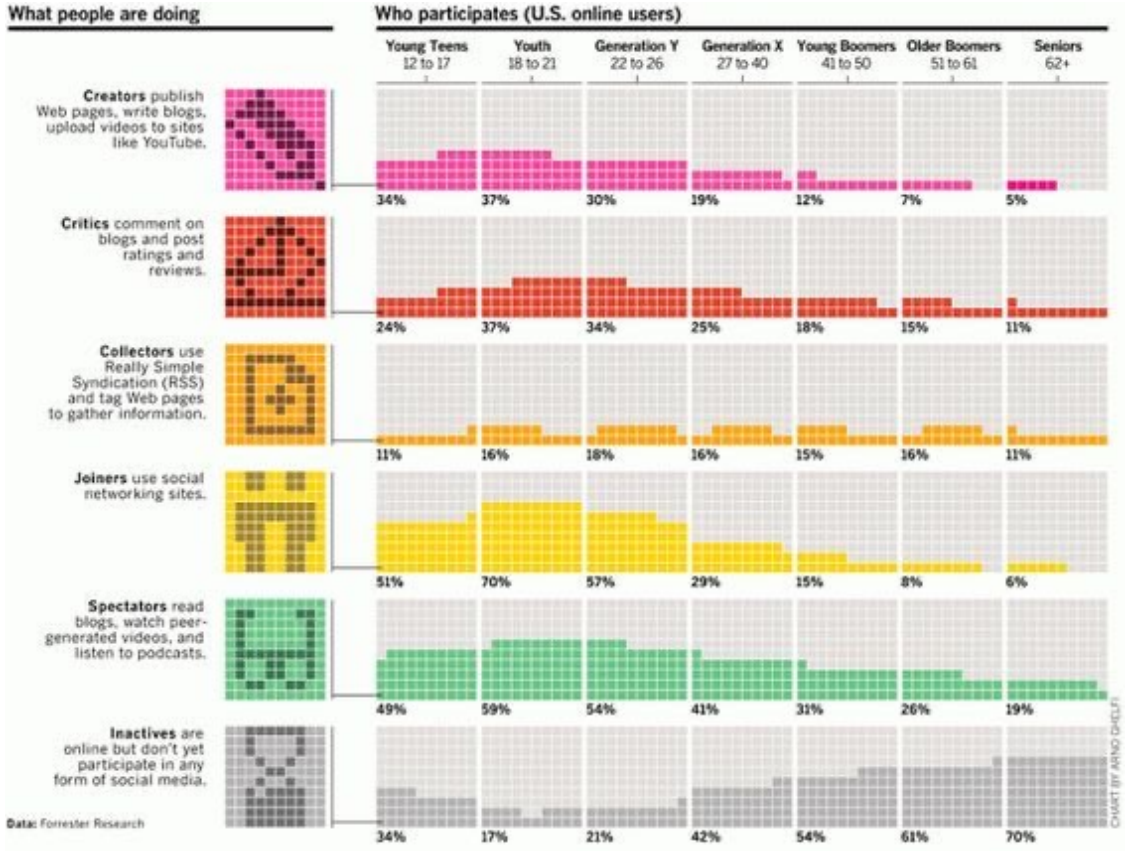
Em elaboração

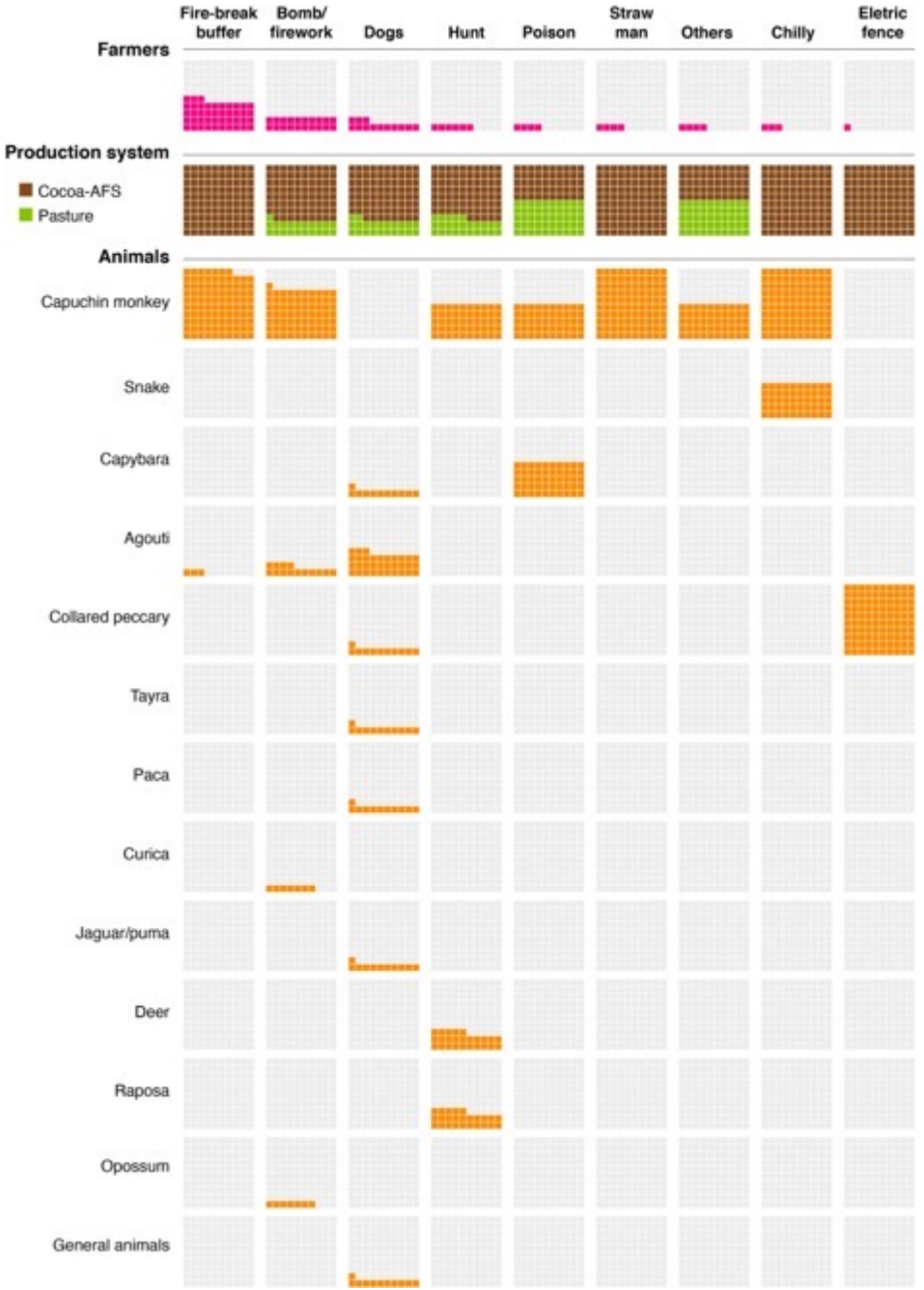
https://www.instagram.com/federicafragapane/

Casos


57
30
32
0
8
57
30
32
8
Above ground biomass
Soil erosion control
Species abundance
Water provisioning
generic_native_forest_monoculture_plantation
800
54
3
2
primary_forest_secondary_forest

Casos

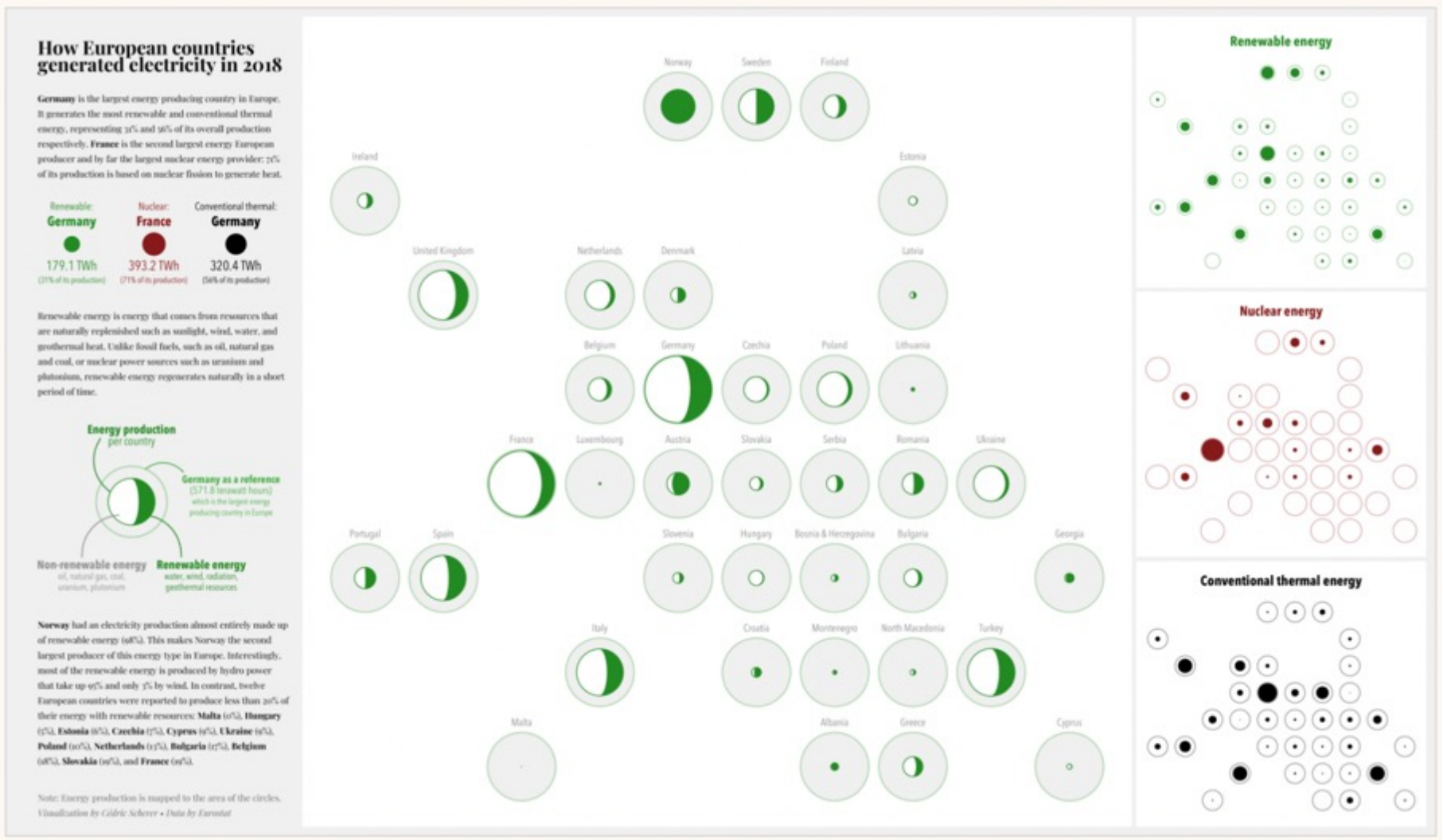




https://www.midiatismo.com.br/o-que-as-pessoas-fazem-e-como-estao-divididas-na-web

Em elaboração

Meta



https://github.com/Z3tt/OutlierConf2021/

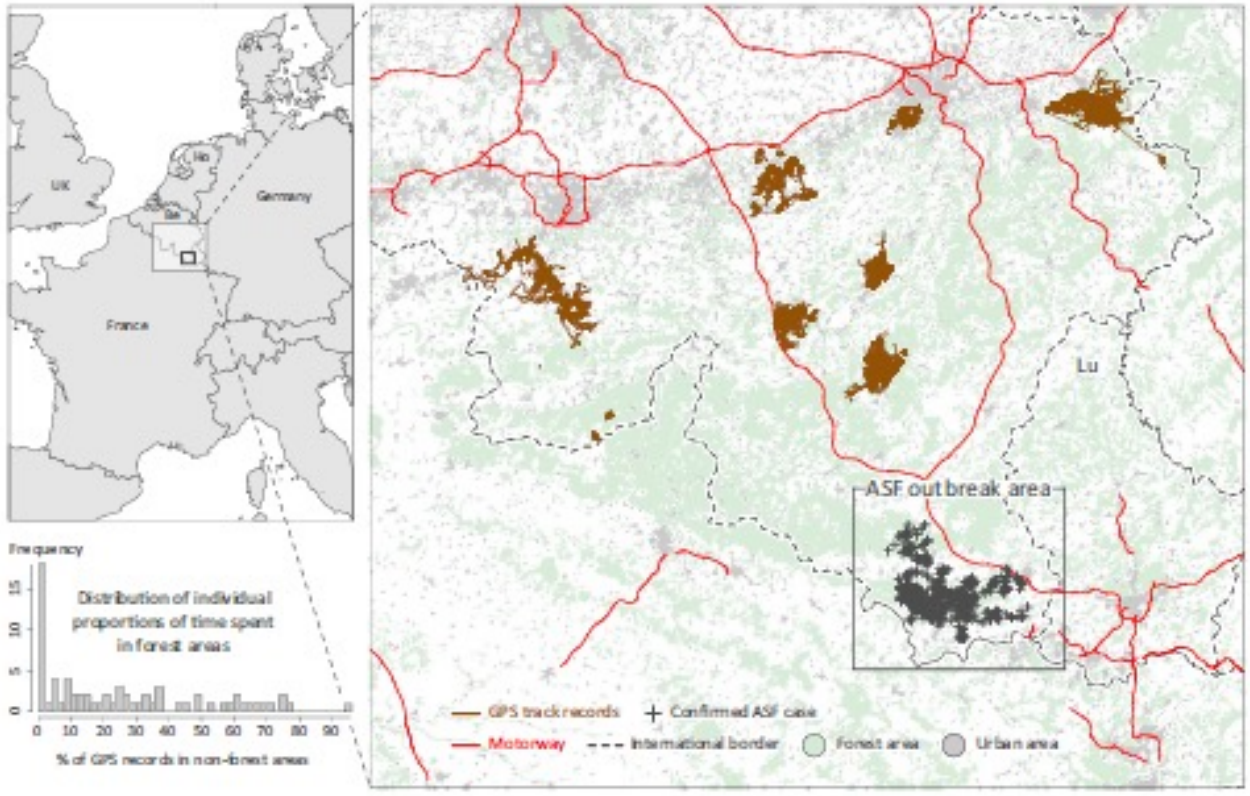
MAPAS

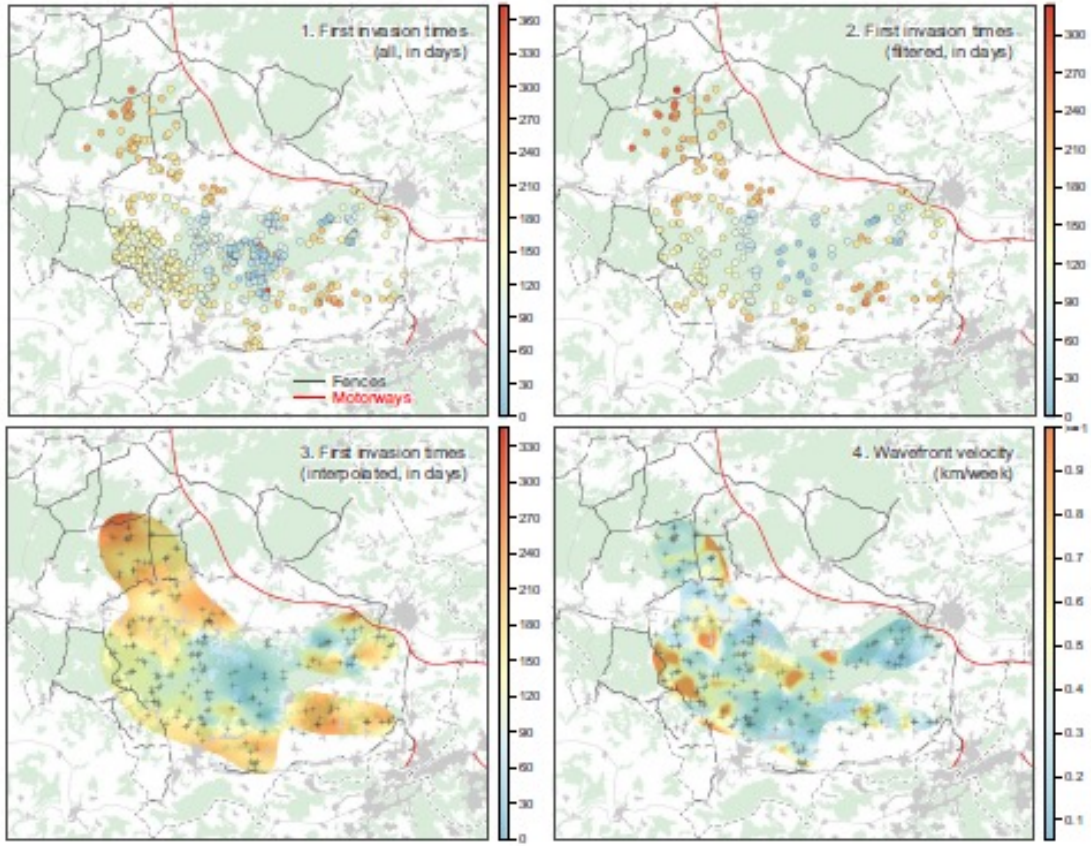
POLÊMICA

RESEARCH ARTICLE

Journal of Applied Ecology

Unravelling the dispersal dynamics and ecological drivers of the African swine fever outbreak in Belgium

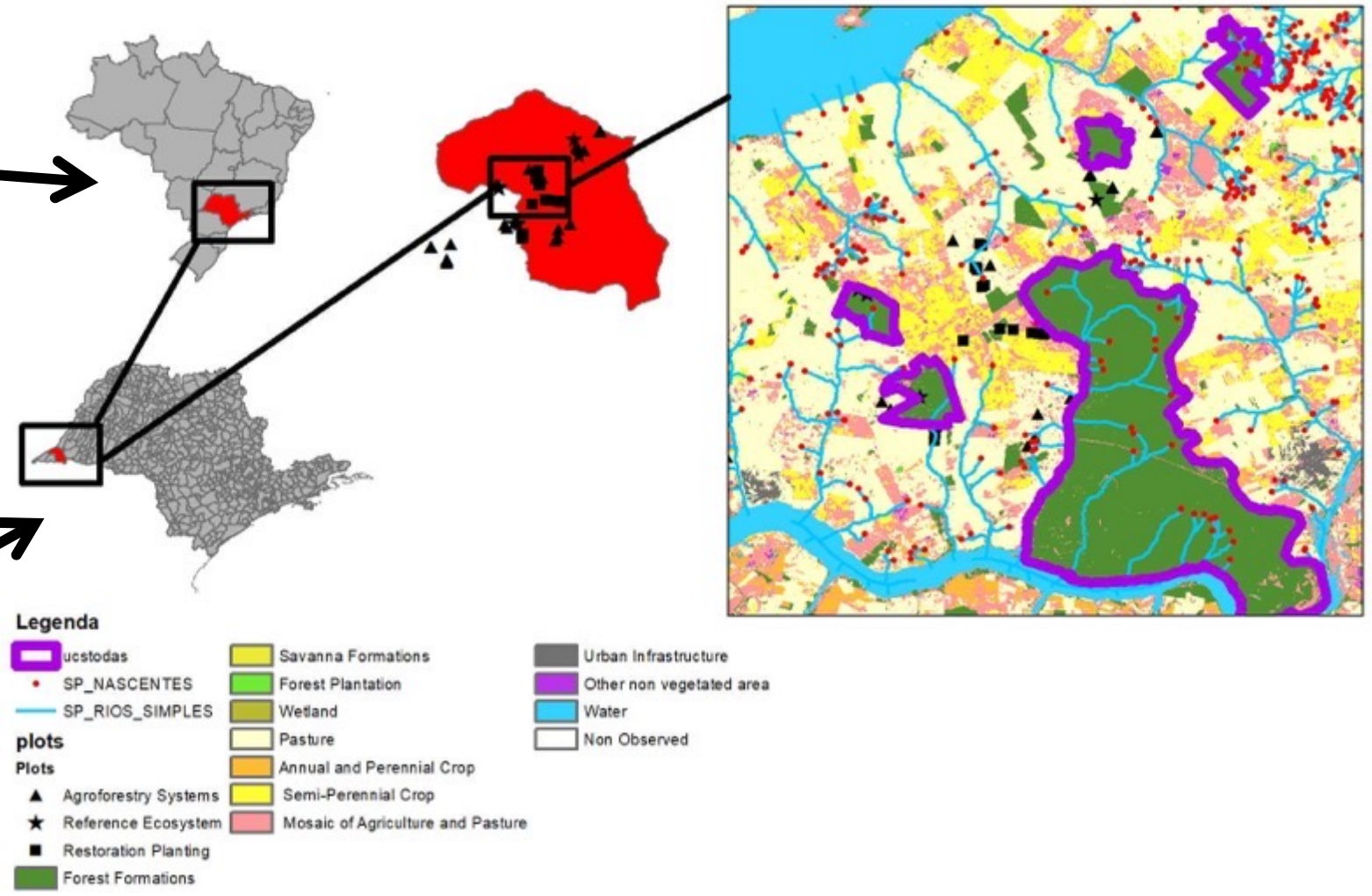




Mapas

Procure não colocar as áreas soltas

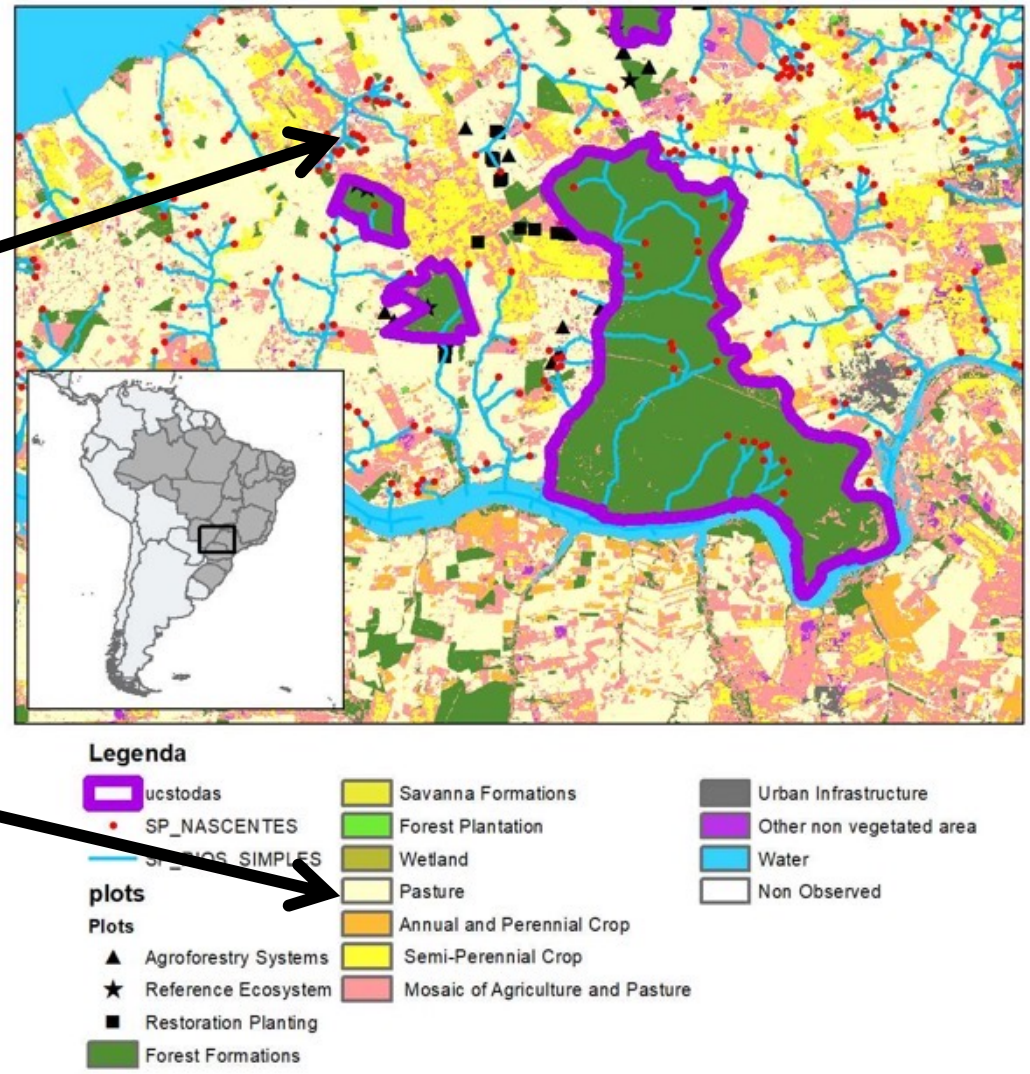
Evite zooms desnecessários



Mapas

Mostre apenas o que é importante.

No caso de uso/cobertura do solo, agrupe e use "*outros usos/coberturas*" nas categorias não relevantes.

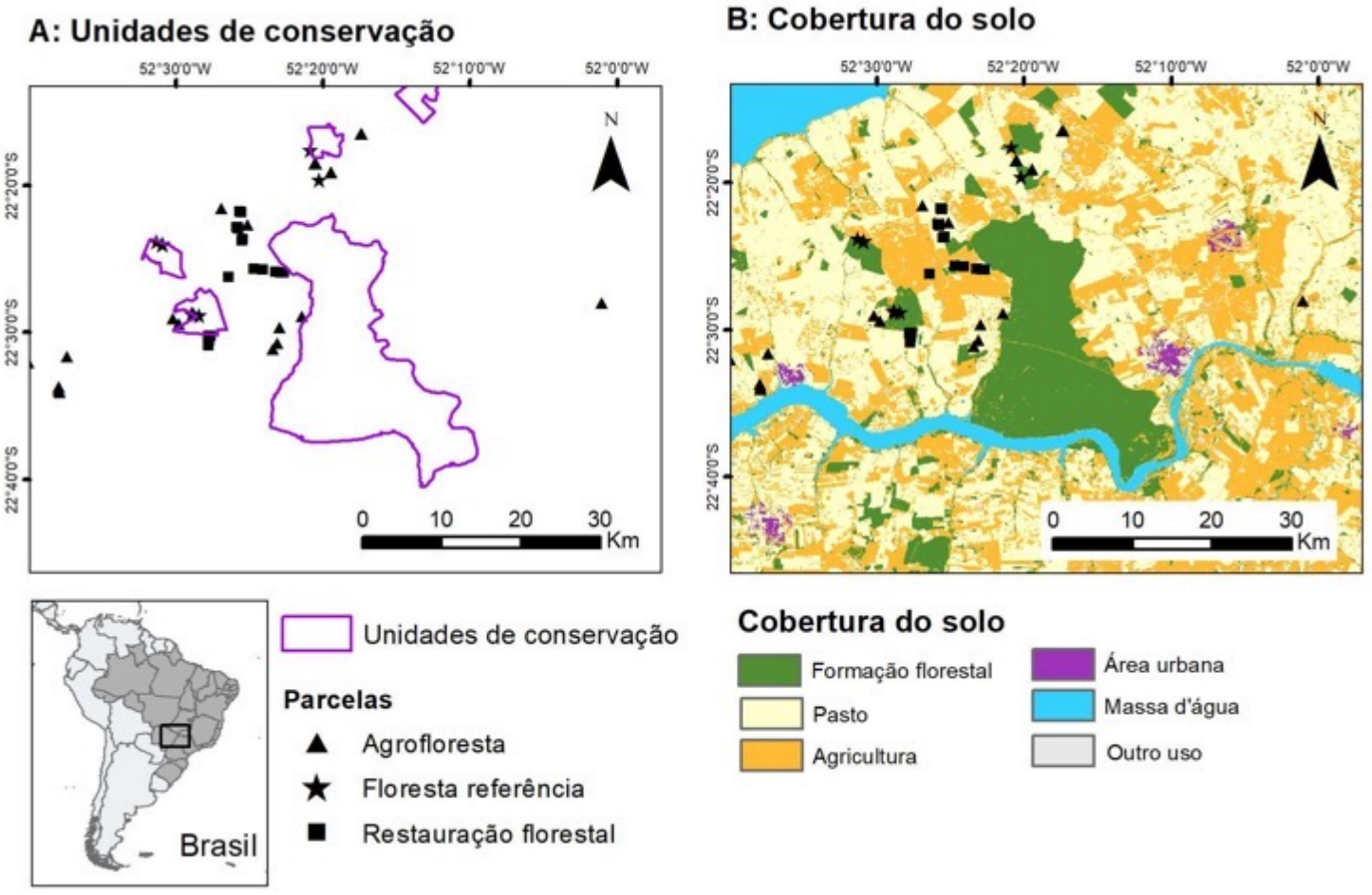


Mapas

Se for necessário faça dois mapas do mesmo local.

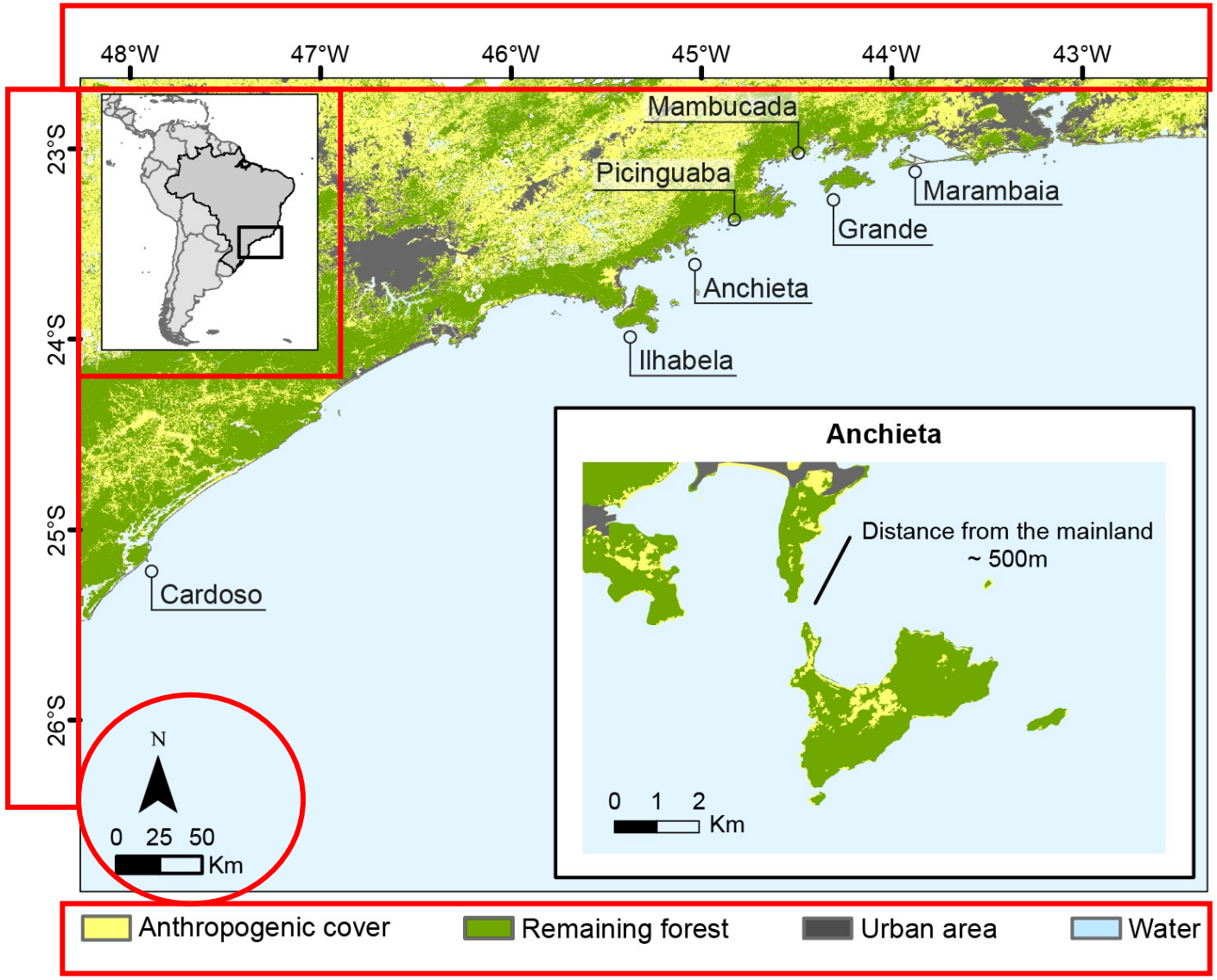
Arrume os detalhes: alinhamento dos itens, tamanho da fonte, etc.

NOTA: Na legenda, os termos costumam ser utilizados no singular.



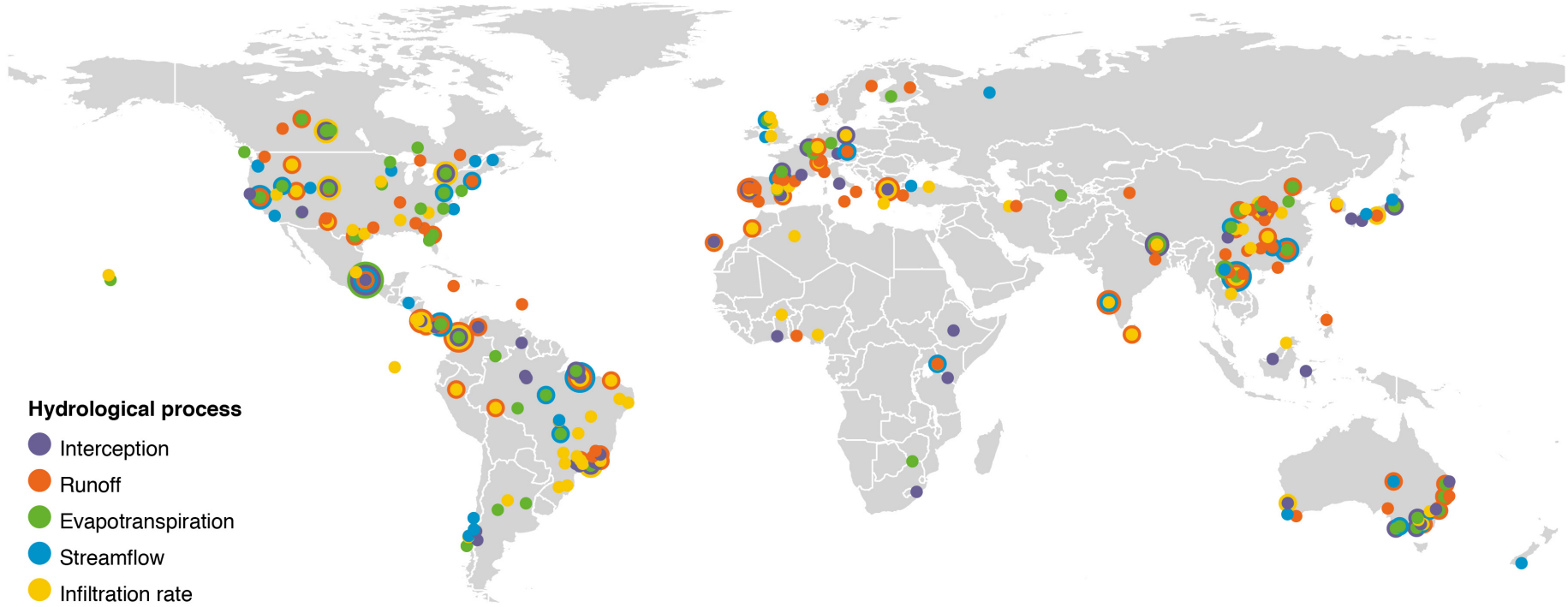
Mapas

Mantenha a simplicidade



Mapas

Em mapas mundiais podemos ainda excluir alguns ou todos os elementos dependendo do objetivo e gosto/revisor.



Linhas brancas e cinza claro para destacar o que importa

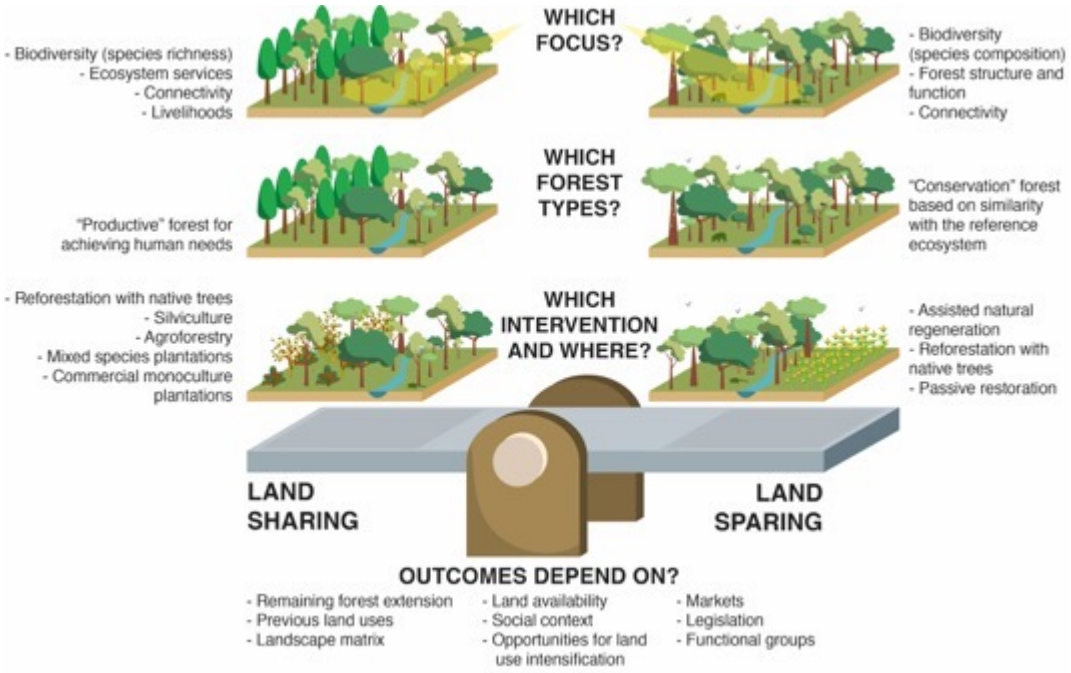
ILUSTRAÇÕES, ESQUEMAS E GRAPHICAL ABSTRACT

Pensando na forma da figura

Ilustrações, esquemas e graphical abstract

- Tente explicar o artigo a alguém

	Which forest?	Which focus?	How to restore?	Depends on?
Land sharing	'Productive' forest for achieving human needs	• Biodiversity (species richness) • Ecosystem services • Connectivity • Livelihoods	• Assisted natural regeneration • Reforestation with native trees • Silviculture • Agroforestry • Mixed species plantations • Commercial monoculture plantations	• Remaining forest extention • Previous land uses • Landscape matrix • Land availability • Opportunities for land use intensification • Social context • Markets • Legislation • Functional groups
Land sparing	'Conservation' forest based on similarity with the reference ecosystem	• Biodiversity (species composition) • Forest structure and function • Connectivity	• Assisted natural regeneration • Reforestation with native trees • Passive restoration	

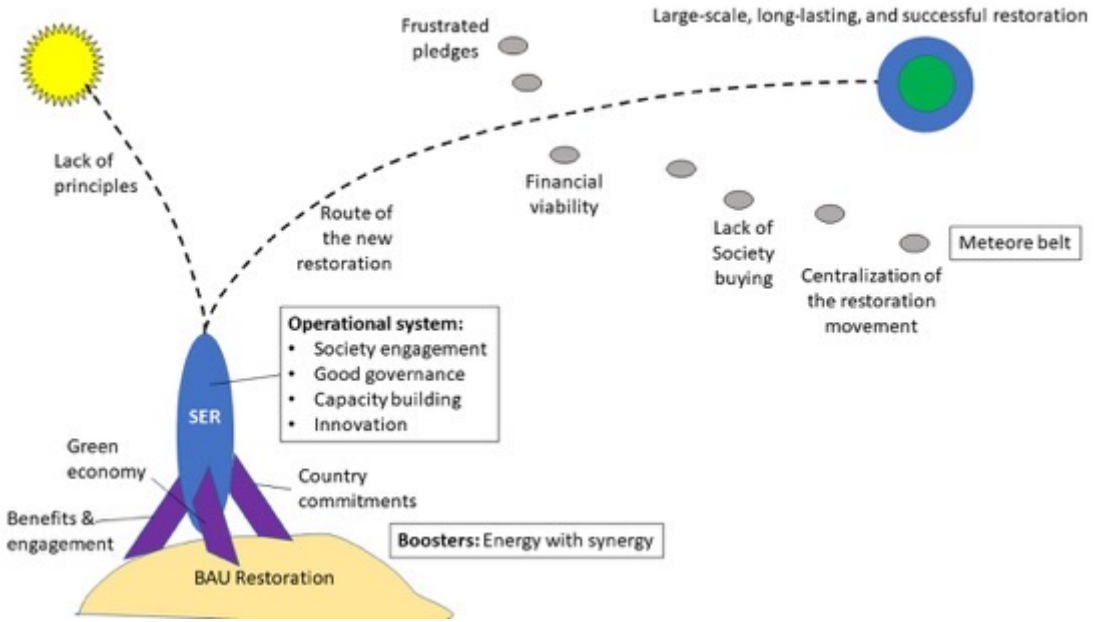


Meli et al., 2019

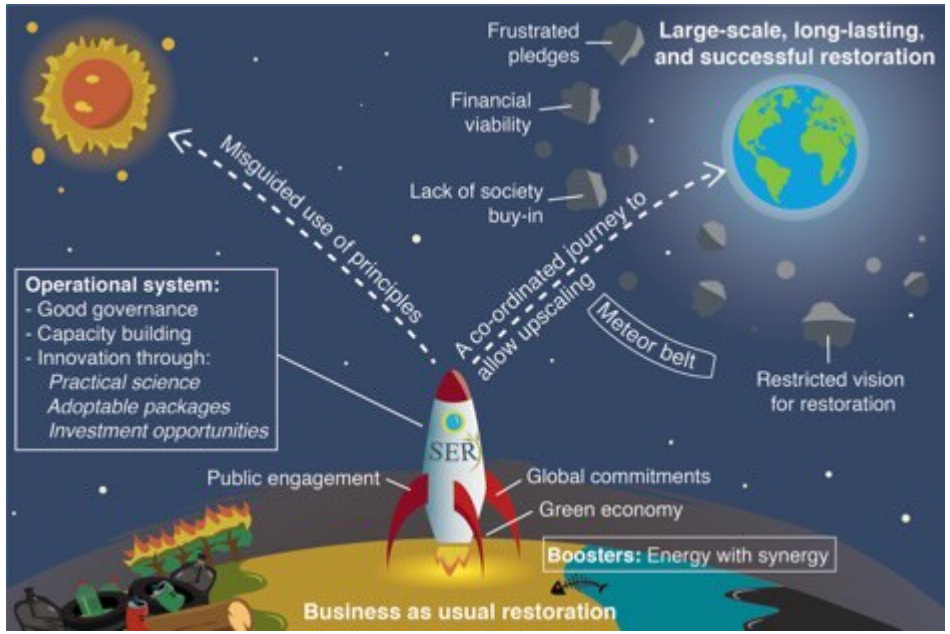
Pensando na forma da figura

Ilustrações, esquemas e graphical abstract

- Não bloqueie nenhuma ideia por “falta de recursos”



Autor: Pedro Brancalion

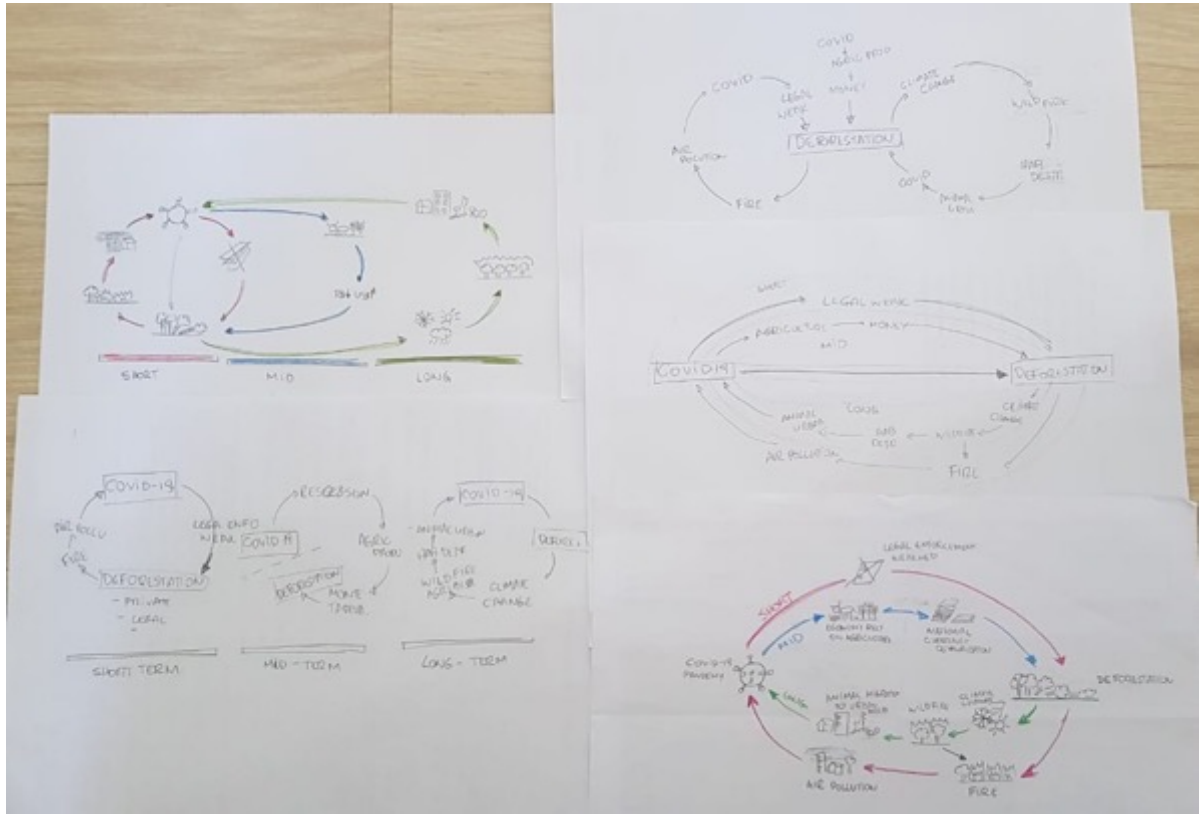


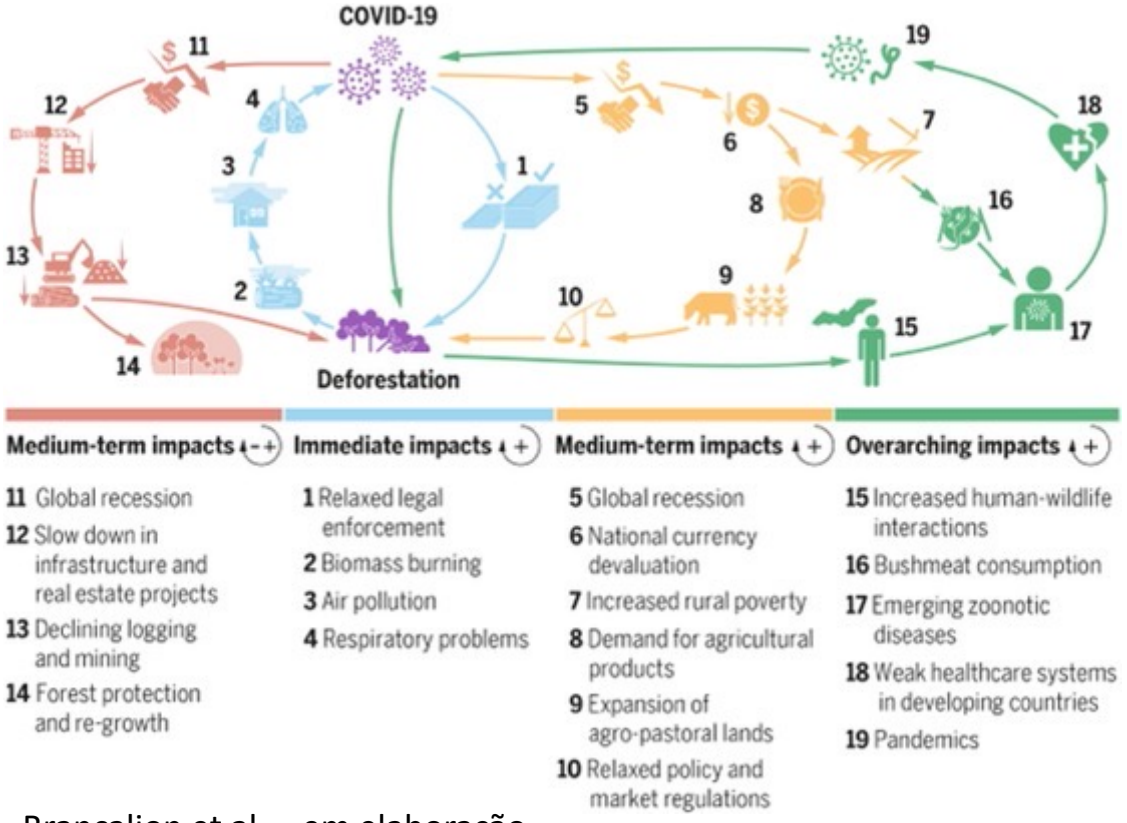
Perring et al., 2018

Pensando na forma da figura

Ilustrações, esquemas e graphical abstract

- Rabisque diversas vezes no papel



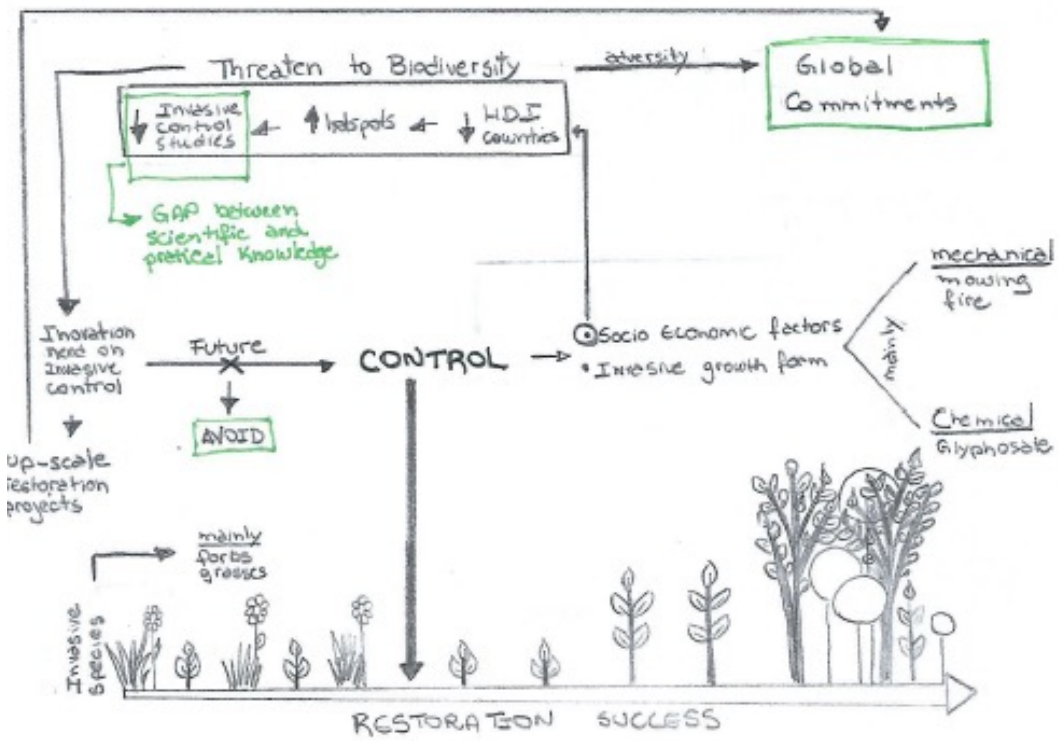


Brancalion et al. – em elaboração

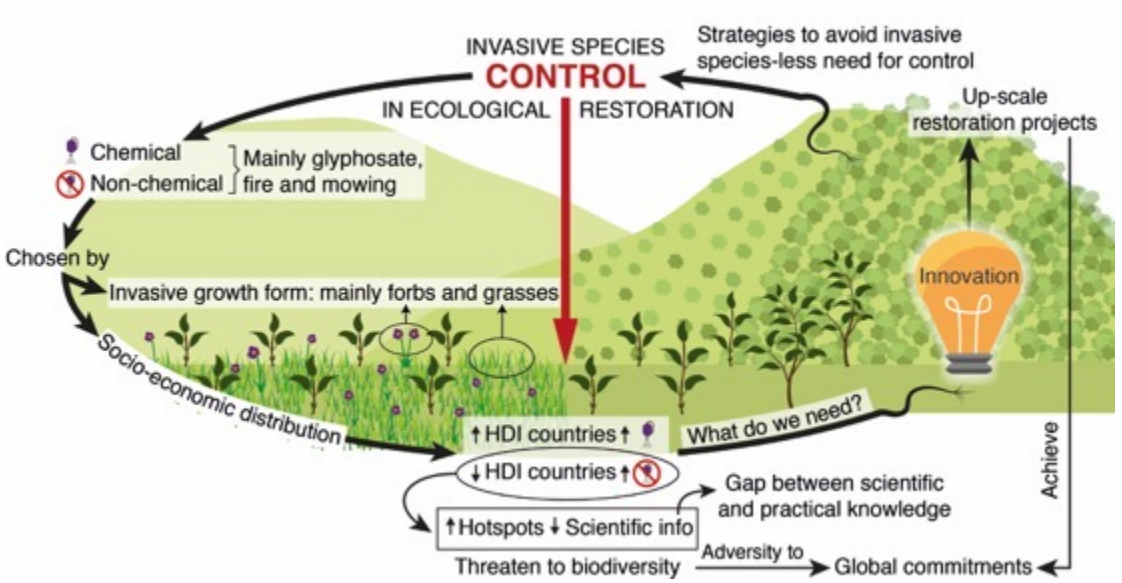
Pensando na forma da figura

Ilustrações, esquemas e graphical abstract

- Rabisque diversas vezes no papel



Autora: Flavia Florido

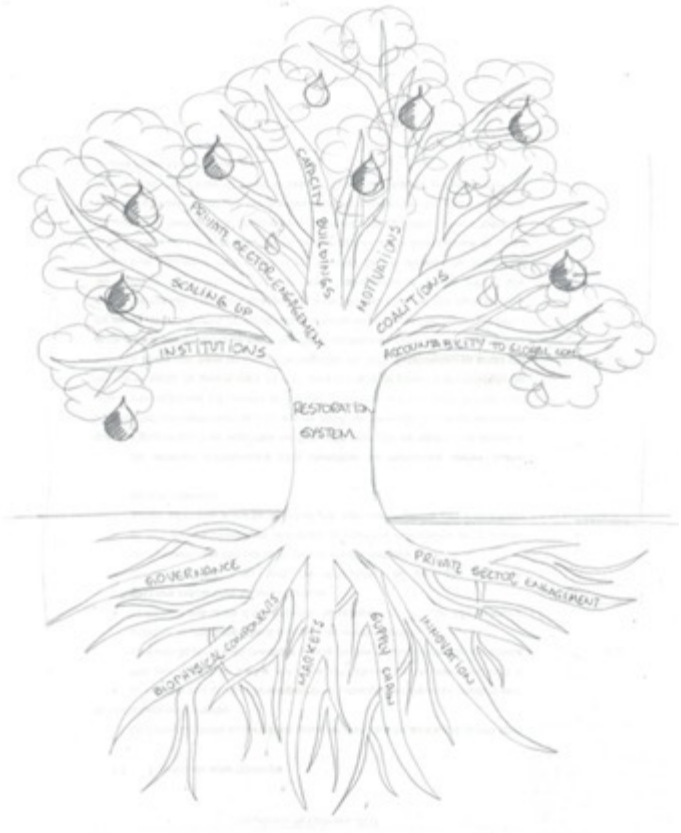


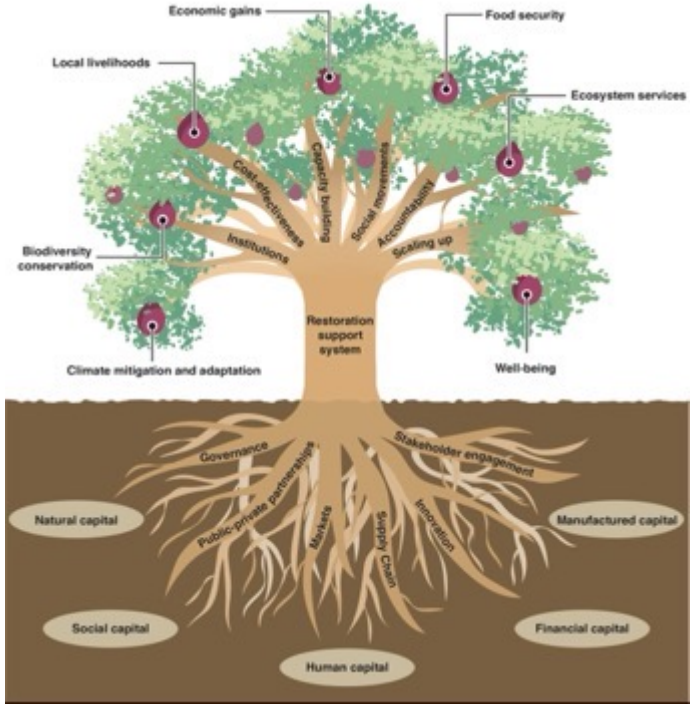
Weidlich et al., 2020

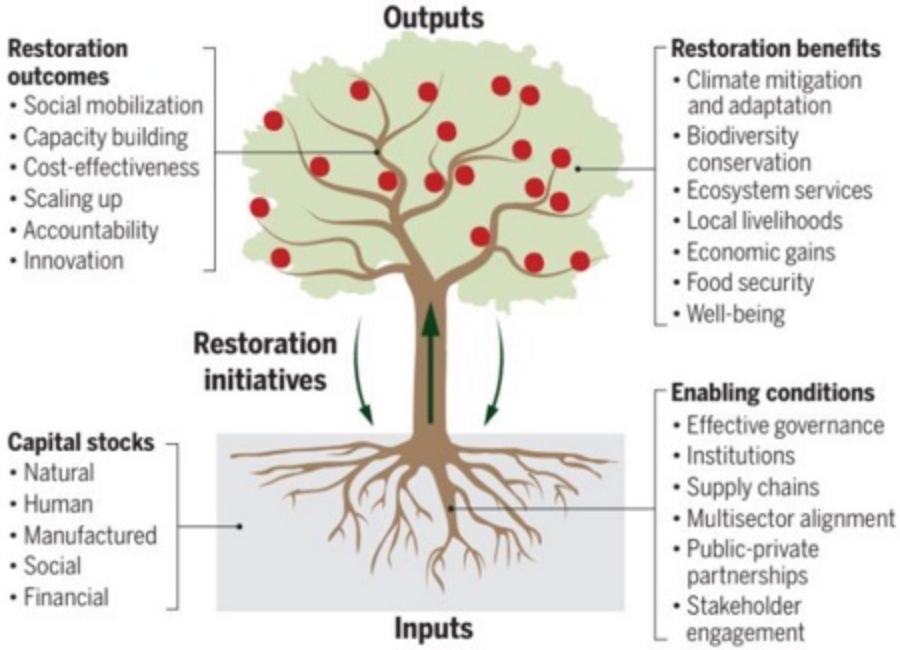
Pensando na forma da figura

Ilustrações, esquemas e graphical abstract

- Às vezes é melhor simplificar





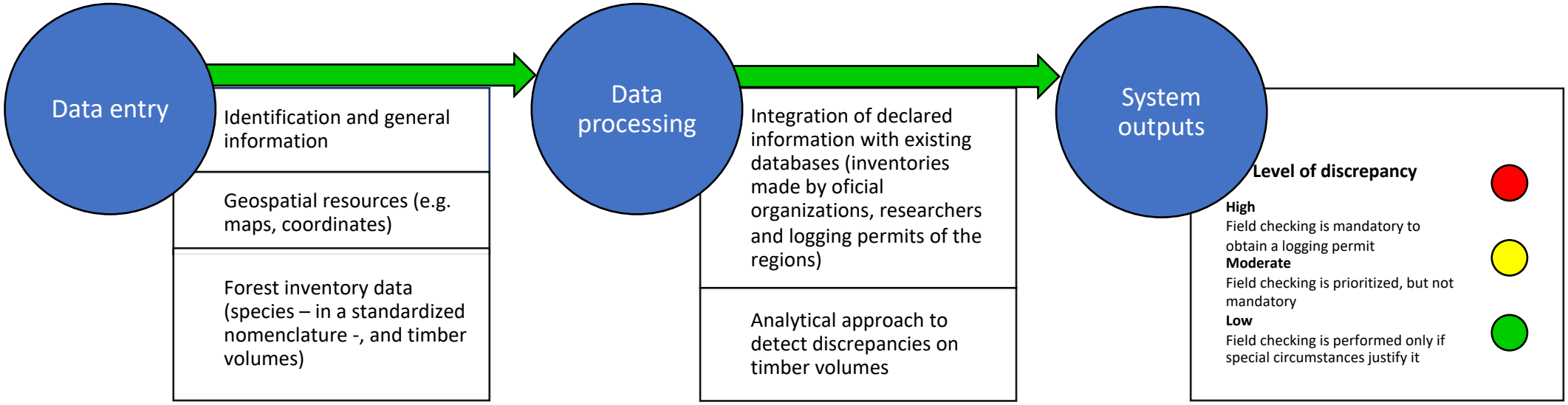


Brancalion et al., 2020

Pensando na forma da figura

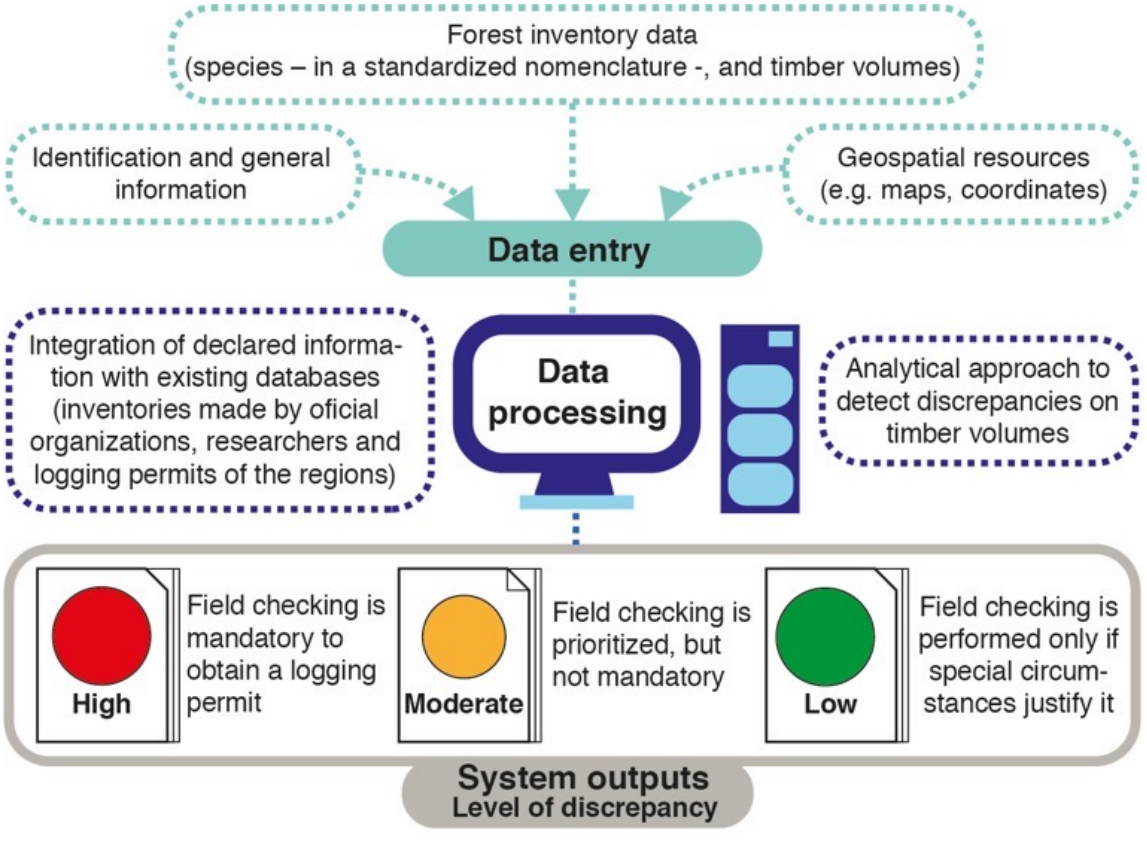
Ilustrações, esquemas e graphical abstract

Outras vezes não



Pensando na forma da figura

Ilustrações, esquemas e graphical abstract



Pensando na forma da figura

Graphical abstract

No caso específico do Graphical Abstract

- É muito difícil resumir o artigo completo no espaço reservado pela revista.
- Procure selecionar a parte mais relevante: metodologia, um resultado.
- Se você for usar um gráfico do artigo, coloque algum bloco de texto para contar sua história
- Busque referências de “infográficos”

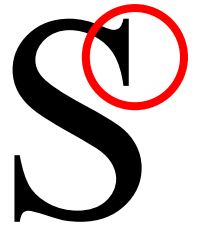
ELEMENTOS COMUNS

Fontes

Lembre de manter o mesmo tipo de fonte e tamanho em todas as figuras, atenção quando usar programas diferentes.

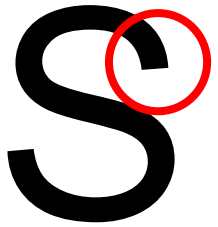
Geralmente Helvetica ou Arial

Tamanho mínimo varia de revista para revista



Com serifa

Times New Roman



Sem serifa

Arial e helvetica

Cores

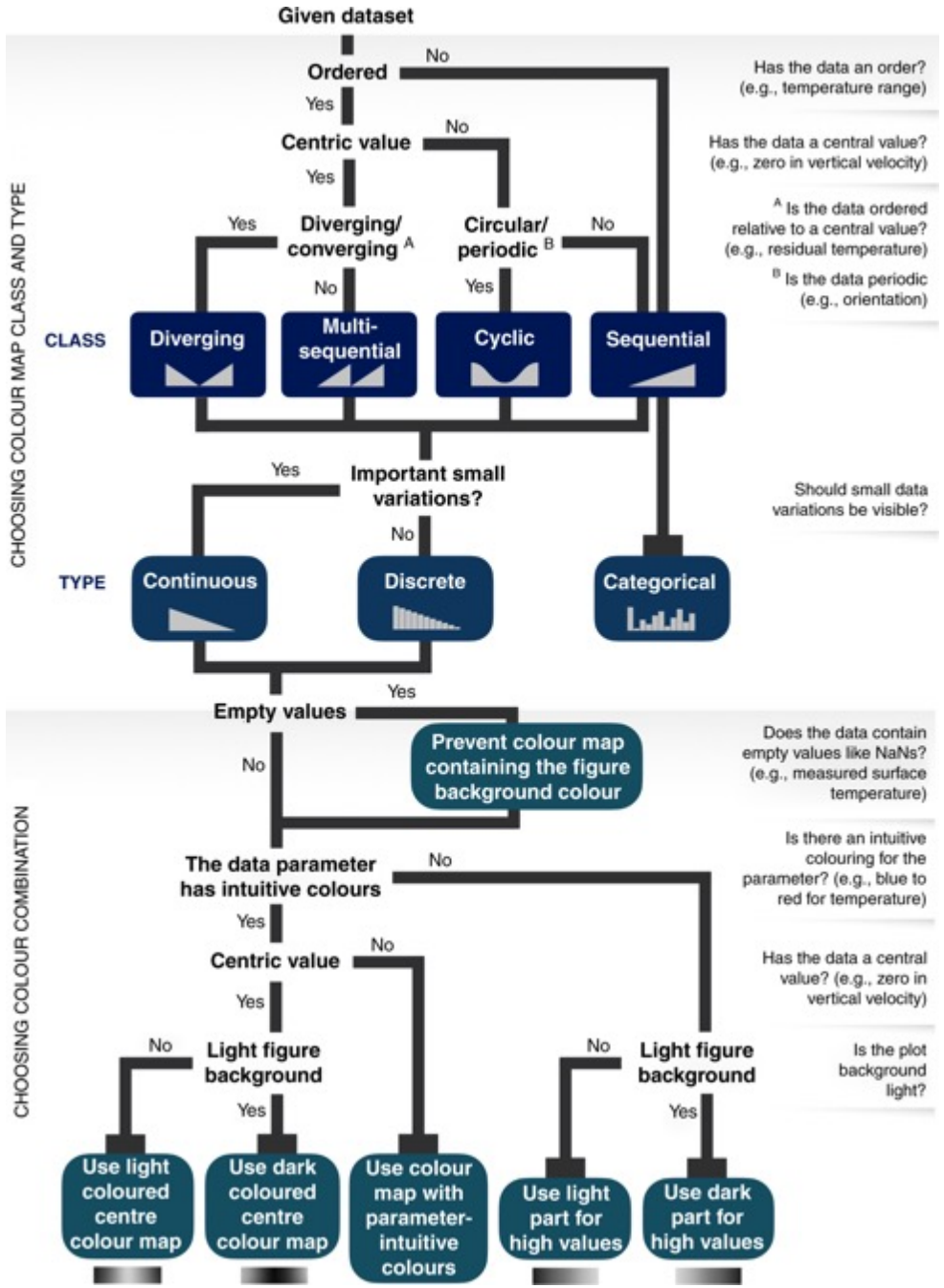
Perspective | Open Access | Published: 28 October 2020

The misuse of colour in science communication

Fabio Crameri, Grace E. Shephard & Philip J. Heron

Nature Communications **11**, Article number: 5444 (2020) | Cite this article

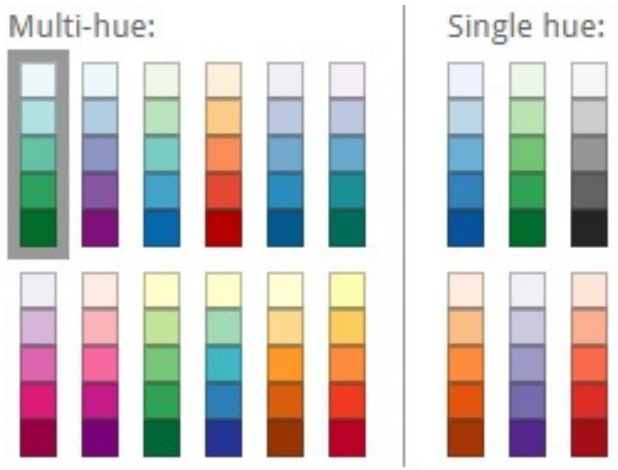
https://www.nature.com/articles/s41467-020-19160-7#Sec10



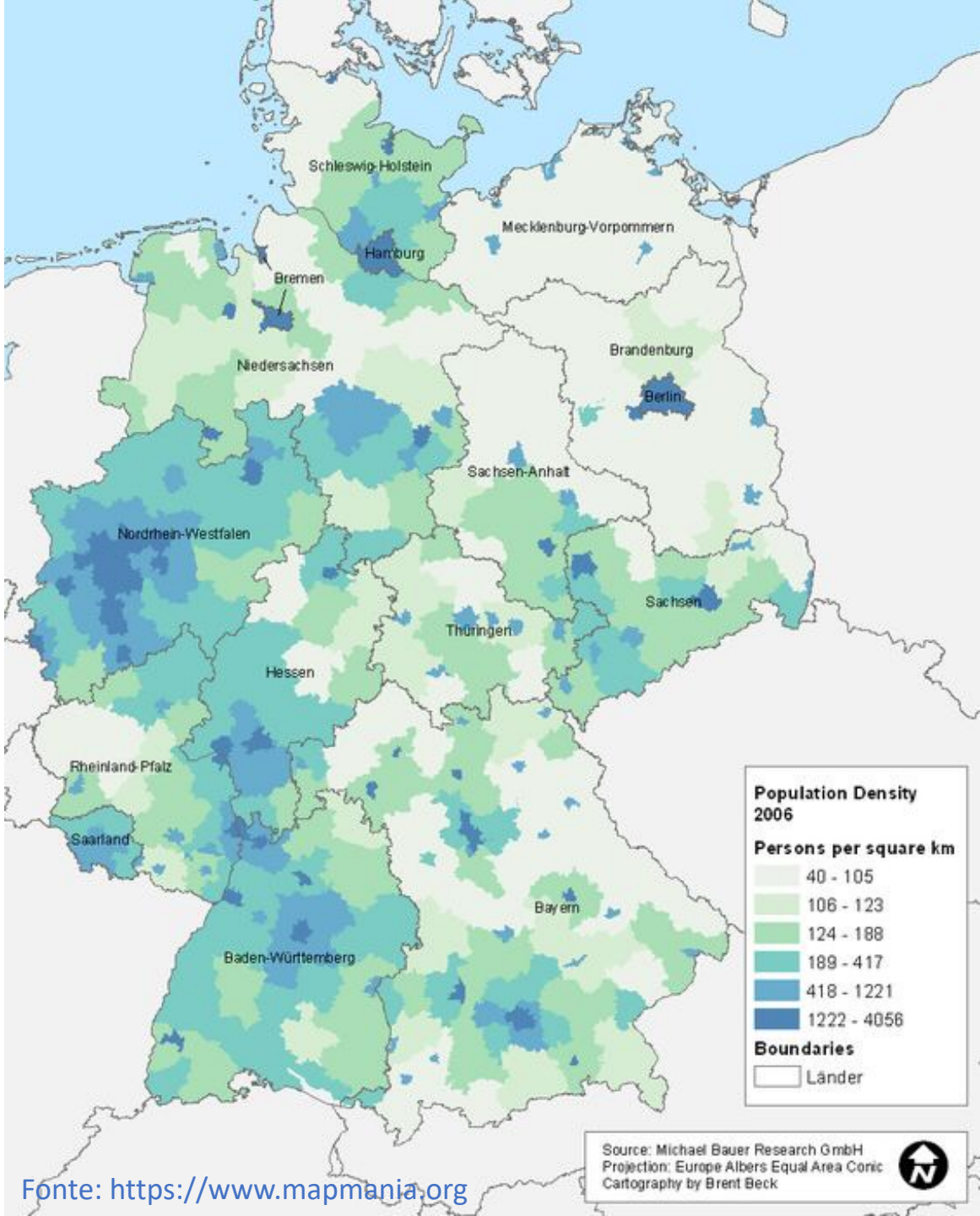
Cores

Escolha o tipo de paleta de cor de acordo com a natureza dos seus dados:

- **Sequencial:** Dados ordenados que possuem um progresso de alto para baixo. P.ex.: densidade



Fonte: https://colorbrewer2.org

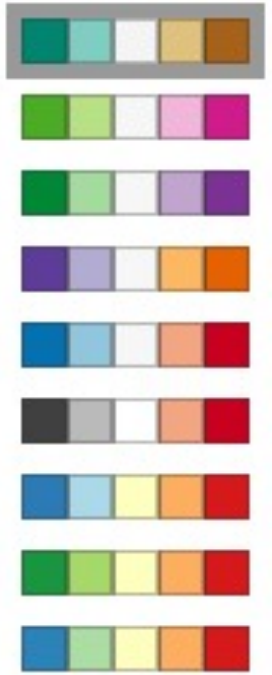


Fonte: https://www.mapmania.org

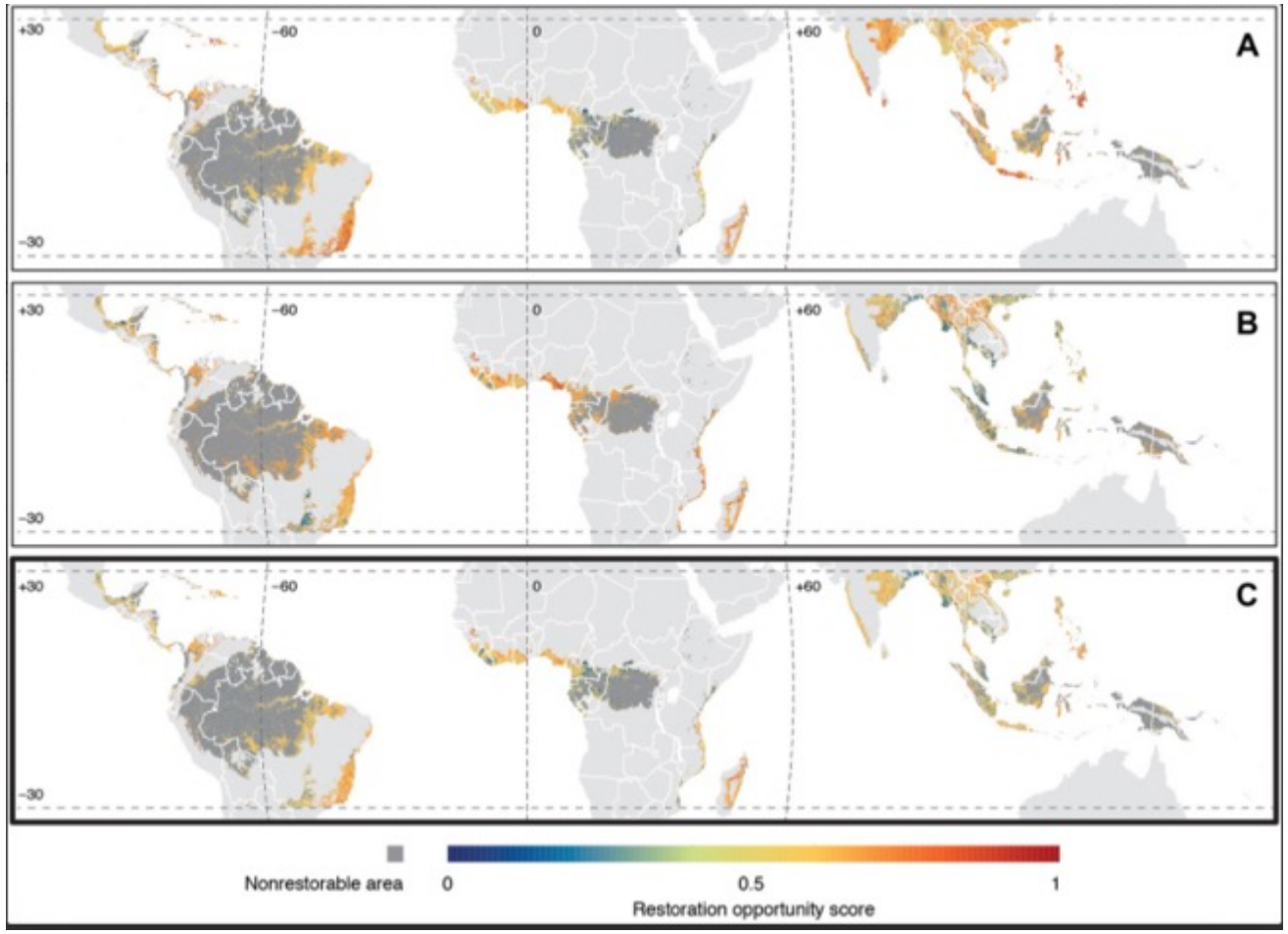
Cores

Escolha o tipo de paleta de cor de acordo com a natureza dos seus dados:

- **Divergente:** ênfase nos extremos com valores intermediários. P.ex.: restauração x desmatamento



Fonte: https://colorbrewer2.org

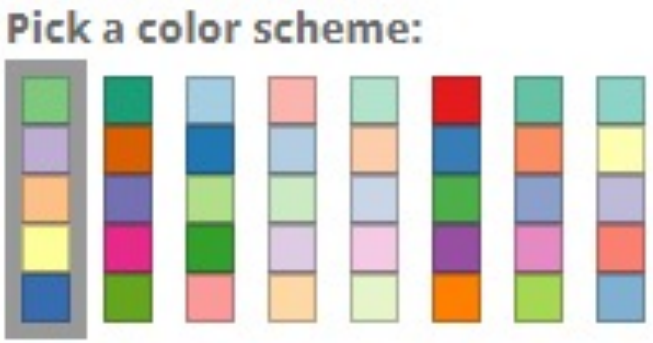


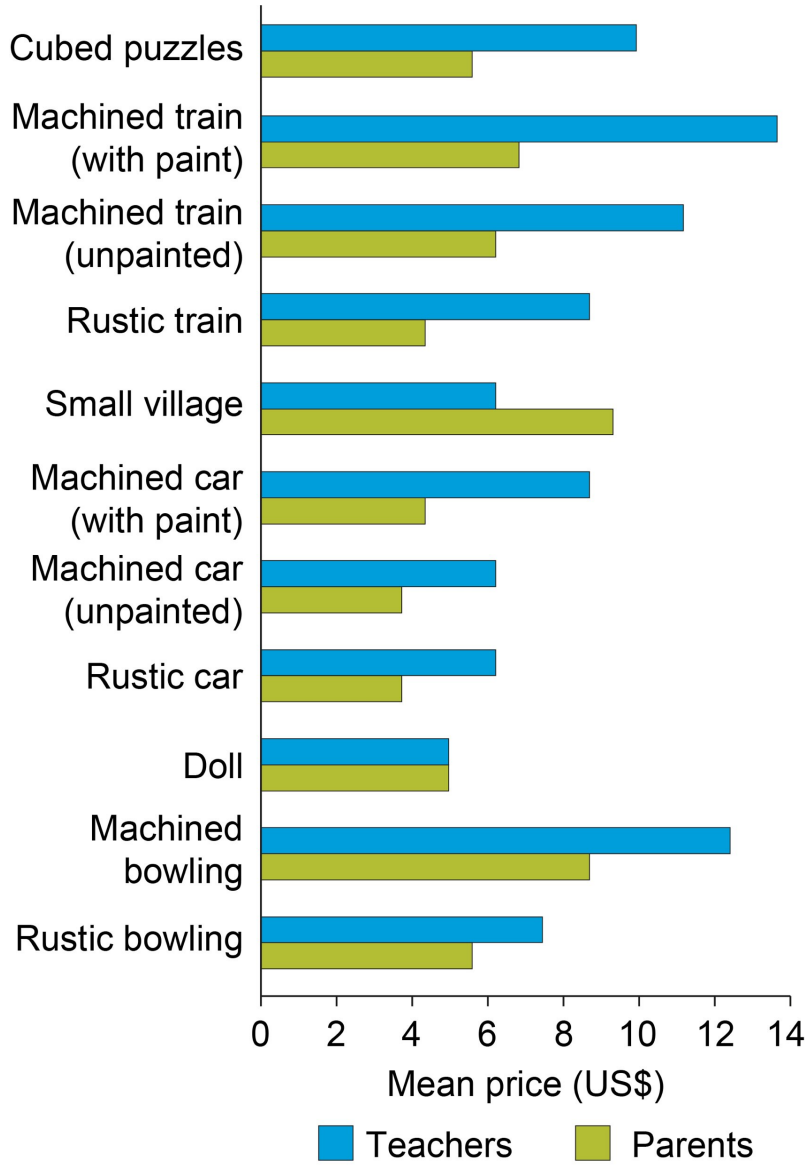
Fonte: https://www.mapmania.org

Cores

Escolha o tipo de paleta de cor de acordo com a natureza dos seus dados:

- **Qualitativo:** Dados categóricos.
P.ex.: uso/cobertura do solo.

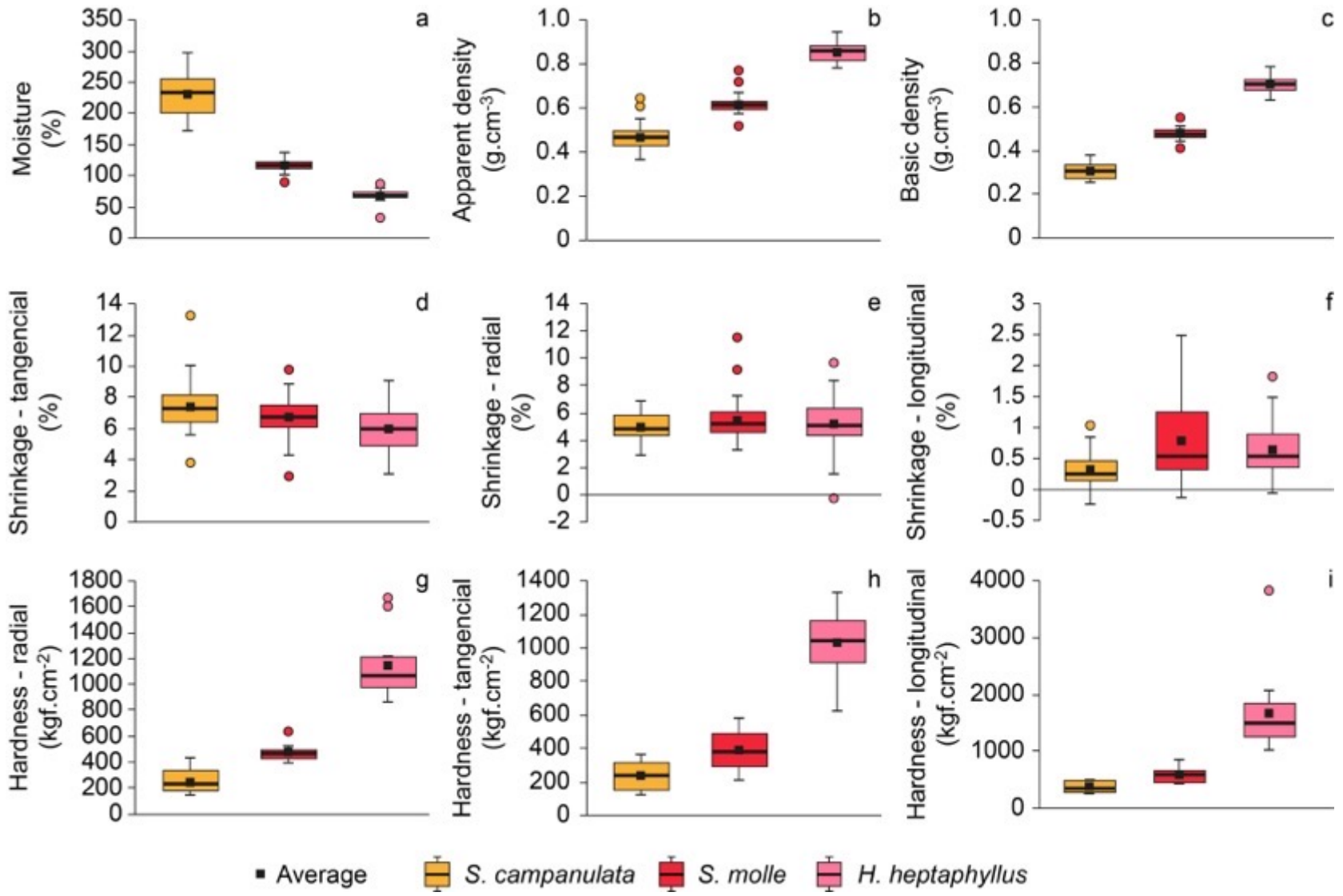




Fonte: https://colorbrewer2.org

Cores

Use as cores do objeto de estudo



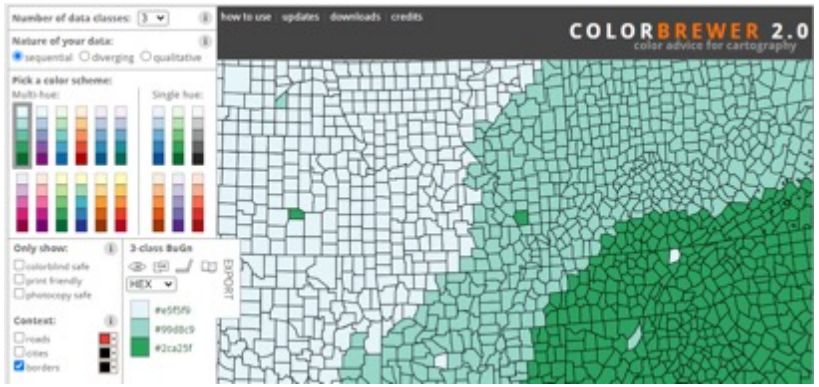
Espatódea Aroeira Ipê rosa

Cores

Busque paletas de cores prontas

“Green color pallet”

Site Color Brewer



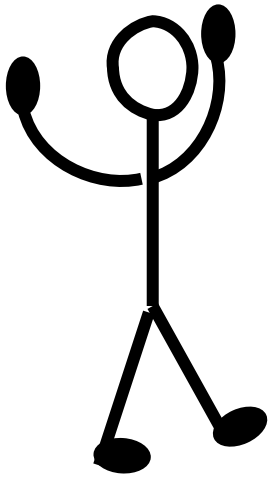
https://colorbrewer2.org/

Teste daltonismo

https://www.color-blindness.com/coblis-color-blindness-simulator/

Desenhos e ícones

Desenho em softwares



PowerPoint
Inkscape
Gimp
Photoshop
Illustrator
CorelDraw

Desenho manual

Autora: Marina Duarte

Sites com ícones

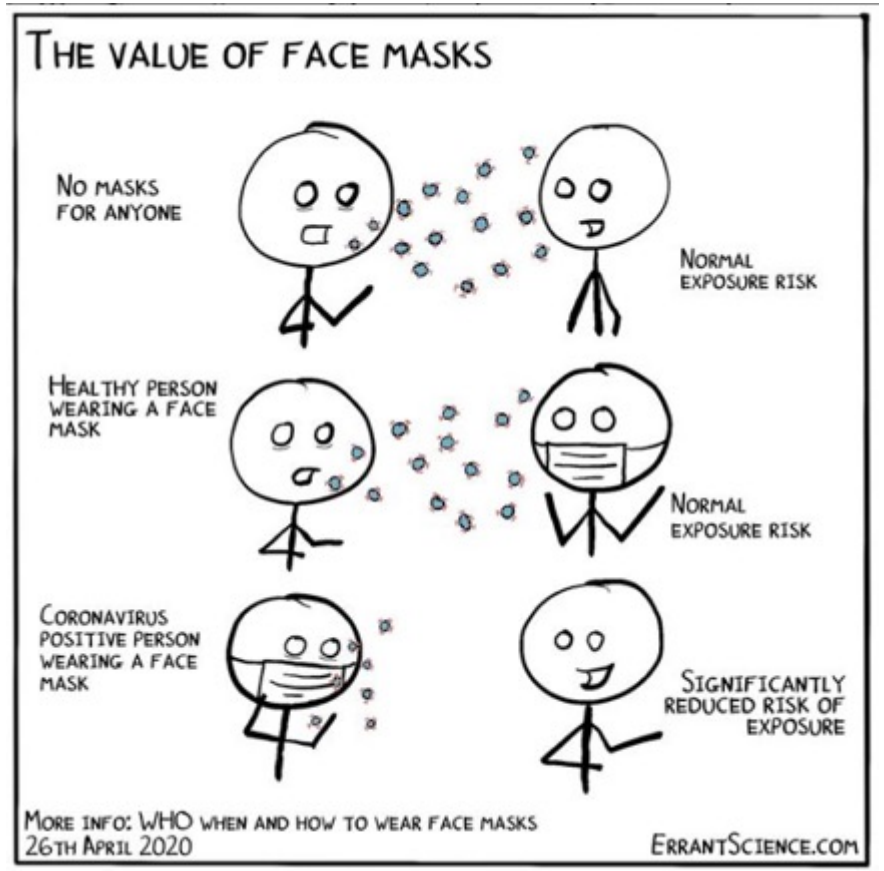
Cuidado com a atribuição!!!!

https://www.flaticon.com/

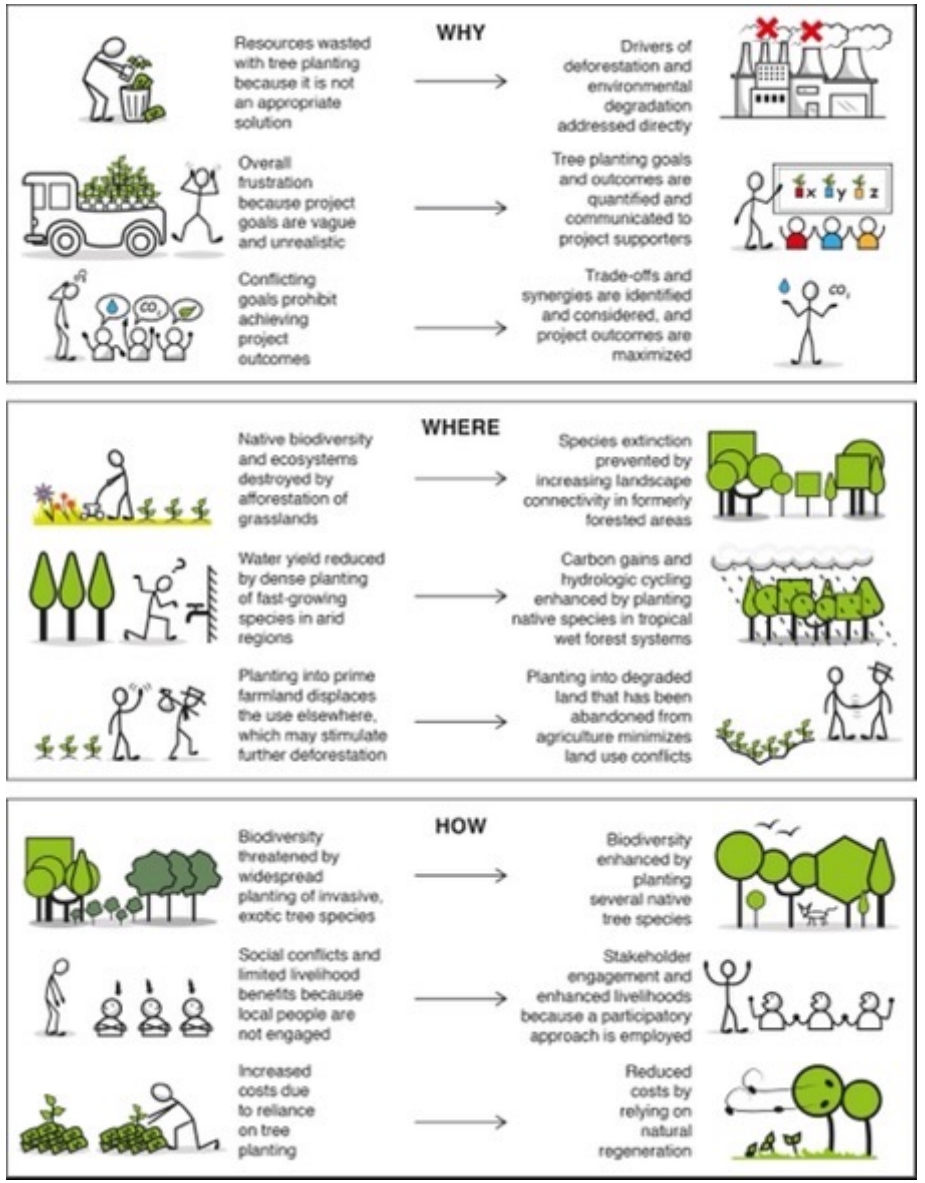
https://thenounproject.com/

https://www.freepik.com

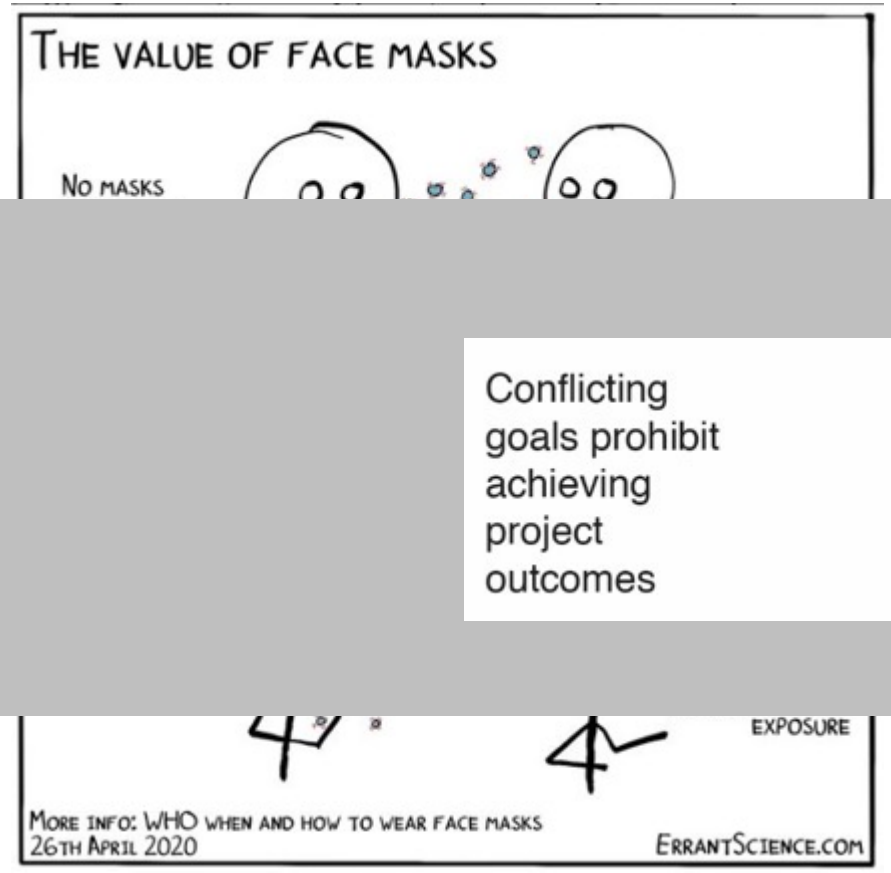
Exemplo artigo 2 ícone foca



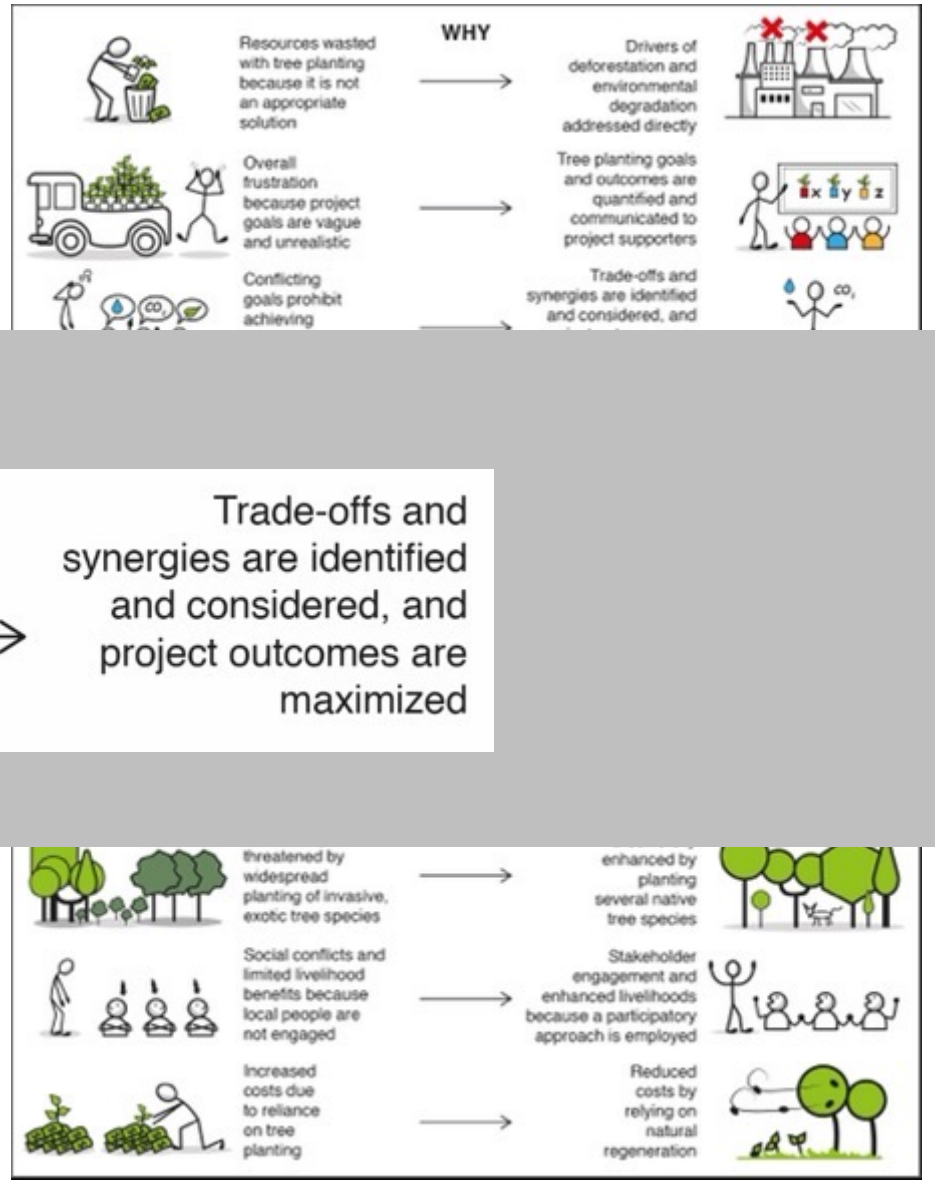
Instagram: @errantscience



Guidance for successful tree planting initiatives
Pedro S. Brancalion e Karen D. Holl



Instagram: @errantscience

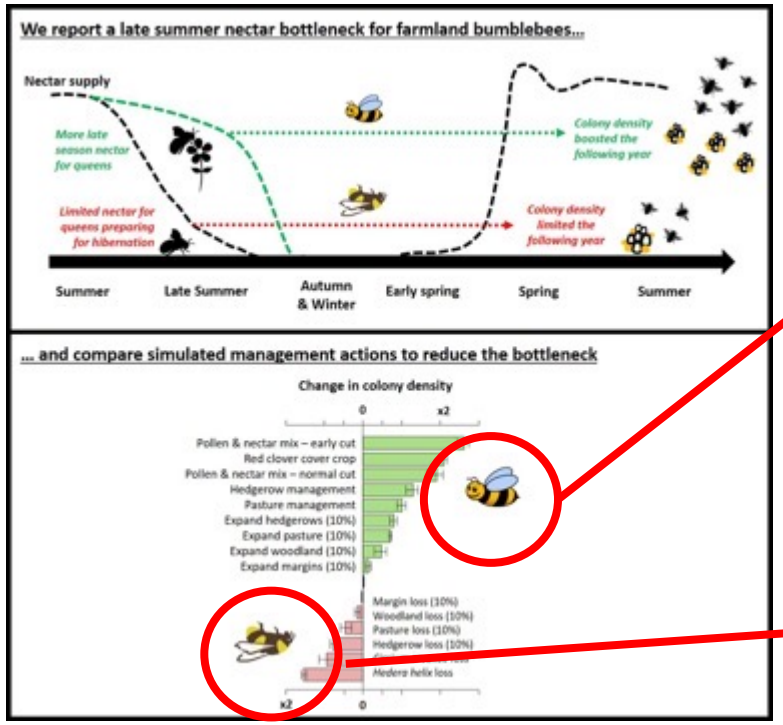


Conflicting goals prohibit achieving project outcomes

→

Trade-offs and synergies are identified and considered, and project outcomes are maximized

Desenhos e ícones



https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.13826

Bloqueio criativo é normal

- Não comece “de cara”
- Tem dias que não vai. Deixa de lado.
- Descubra uma atividade que faça com que as ideias apareçam
- Ócio criativo

OBRIGADA!

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